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NAVAL MATERIAL COMMAND WASHINGTON DC

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NAVY TECHNOLOGY TRANSFER PROGRAM FY 77 SUMMARY STATISTICS. (U)  
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## SUMMARY STATISTICS

# NAVY TECHNOLOGY TRANSFER PROGRAM

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This publication provides details about the FY 1977 Navy Technology Transfer Program. It summarizes the 360 projects which the Navy undertook in FY 1977 for sponsors from Federal agencies states and local governments industry and small businesses, and non-profit institutions and includes information on 56 projects possessing technology transfer potential sponsored by DoD, the book's scope does not encompass export controls or foreign technology transfer transfer in any sense.		

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## FOREWORD

This publication provides details about the FY 1977 Navy Technology Transfer Program. The contents of the book are derived from the reports submitted by Navy activities engaged in technology transfer. These reports also are the basis for the annual report to the Secretary of the Navy required by SECNAVINST 5700.14 and OPNAVINST 5700.13.

This book summarizes the 360 projects which the Navy undertook in FY 1977 for sponsors from federal agencies, state and local governments, industry and small businesses, and non-profit institutions. The Program also provided unique services not available from the private sector and not in competition with the private sector. The book includes information on 56 projects sponsored by DOD activities but nonetheless possessing technology transfer potential. The book's scope does not encompass export controls or foreign technology transfer in any sense.

The Navy instituted a formal Technology Transfer Program in 1972 as a result of successful experimental technology transfer programs organized in the late 1960s and early 1970s. The Program is chartered "to establish a systematic and comprehensive policy for the transfer of appropriate technologies ... to the civilian sector and for the identification and cooperative development of coming technologies of both military and civilian interest." The Technology Transfer Program has been oriented toward local government and the public sector in general and is now also emphasizing programs for small business and industry in cooperation with such organizations as the Department of Commerce and the National Science Foundation.

The Fiscal Year 1977 program used approximately 1 percent of the collective budgets and 1.3 percent of the total professional man-years of participating activities, which is well within the 3 percent limit imposed on DOD activities.

Substantial benefits were realized through this program during FY 1977. New product markets were opened, for example, by transferring ocean farm technology to industry. The Technology Transfer Program enhanced the improvement of existing products and processes and promoted standardization. The Government-Industry Data Exchange Program documented savings of over \$40 million in cost avoidance by American industry in Calendar Year 1976. Navy technology transfer included such fundamental and important areas as firefighting, medical and pollution abatement technology to the civilian sector. Results were constructive and illustrated the continuing potential of the Navy Technology Transfer Program.



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## SECTION 1

### HOW TO USE THIS BOOK

This section acquaints the reader with the other major sections of the book, noting information which the reader can obtain from each section and alerting the reader to any idiosyncracies of the information.

An internal table of contents appears at the beginning of each major section of the document (with the exceptions of Appendices A and E). These internal tables of contents itemize information available in the larger sections.

This issue of the Navy Technology Transfer Projects marks a change in format from previous issues. Changes have been made to increase the amount of information accessed to the reader. Comments, criticisms, or suggestions for further improvements are strongly encouraged and should be forwarded to MAT 08T4.

#### Section 2: Overview of the FY 1977 Navy Technology Transfer Program

This section is a brief written summary of the overall purpose, organization, and operation of the Navy Technology Transfer Program.

Section 2 also highlights outstanding projects in greater detail.

#### Section 3: FY 1977 Technology Transfer Summary Statistics

This section provides a condensed statistical overview of the Navy Technology Transfer Program. The tables organize the data by type of sponsor, individual sponsors, technological area, and performing activity. DOD components of statistics are itemized.

Total figures may vary slightly from table to table because of differences in rounding.

The number of projects in tables which are organized around individual sponsors will be higher than the actual total, since joint sponsors received credit as if each had individually sponsored the project.

Subtotals are not included for entries which consist of one item.

Section 4: FY 1977 Technology Transfer Projects, Listed by Technological Area

Section 4 lists all reported technology transfer projects by the technological area which best describes the project. Projects are loosely grouped within technological area by type of sponsor (federal first, then DOD, state and local, industry and small business, and non-profit institution). Details provided include: project description, a note on Navy technology applied, a progress report, and funding and manyear levels for FY 1977 and FY 1978 (estimated).

An asterisk in the project description column indicates a project begun in FY 1977. A '0' in funding or manyear columns can indicate a reported '0' or a non-response.

Technological area categories are generally self-explanatory. Technological guidance generally includes projects which offered across-the-technological-board advice on technological problems requiring solutions.

Section 5: FY 1977 Technology Transfer Projects, Listed by Performing Activity

Section 5 lists all technology transfer projects by the particular laboratory or activity which undertook the project. Projects are listed under each activity alphabetically by technological area. Details provided include project description, a notation on Navy technology applied, progress report, and funding and manyear allocations for FY 1977 and FY 1978 (estimated).

As in Section 4, an asterisk in the project description column indicates a project begun in FY 1977. A '0' in funding or manyear columns can indicate a reported '0' or a non-response.

Section 6: FY 1977 Inventions and Patents

Highlights of the invention licensing program are written up in Section 2.

This section describes all reported patent applications and granted patents for FY 1977, listing them alphabetically by technological areas (same as those used in Section 4). Details include the patent application or patent number, purpose of the patent, and potential commercial applications.

INDEX 1: FY 1977 Technology Transfer Projects, Indexed by Sponsors

The index is keyed to Sections 4 and 5, which list all reported technology transfer projects by technological area and performing activity, respectively.

The index alphabetically lists individual sponsors within type-of-sponsor categories (federal, state and local, industry and small business, non-profit institution). The index indicates which pages contain projects funded by individual sponsors.

Appendix A: Navy Technology Transfer Focal Points

Appendix A lists Navy activities participating in the technology transfer program and provides addresses and phone numbers (commercial and Autovon) for all activities.

This appendix also identifies each activity's Technology Transfer Focal Point, who is the person to contact for further information about the activity's technology transfer projects/capabilities.

Names of activities in this section are current (two or three have changed since the activities' reports were received, and those changes are reflected in this section only).

Appendix B: FY 1977 Technology Transfer Projects, Lists of Sponsors

Appendix B identifies all sponsors of FY 1977 technology transfer projects, alphabetically listing them within type-of-sponsor categories (federal, state and local, industry and small business, non-profit institution).

Appendix C: FY 1977 Technology Transfer Conferences and Symposia

Appendix C lists all conferences, symposia, and similar meetings attended or sponsored by the Navy.

Conferences are listed alphabetically by the involved activity and then alphabetically by title under each activity. Details include date and attendance.

Appendix D: Lists of Navy Activities Submitting Reports for FY 1977 Technology Transfer Annual Report

Appendix D lists the names of all Navy activities which submitted input for the FY 1977 technology transfer annual report.

Reporting activities are listed alphabetically in two categories--those with positive reports and those with negative reports.

Appendix E: Abbreviations and Acronyms

Appendix E notes all abbreviations and acronyms used in this document and provides the corresponding complete names.

Abbreviations are listed alphabetically by abbreviated form.

## SECTION 2

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## 1. GOALS, SCOPE AND ADVANTAGES OF THE NAVY TECHNOLOGY TRANSFER PROGRAM

The Navy Technology Transfer Program has broadly defined goals and scope. The goals of Navy technology transfer are: (a) transferring appropriate technology from primary military uses to secondary public and private applications, and (b) promoting joint cooperative development programs that address problems of mutual concern to the Navy and other agencies or organizations.

In pursuit of the above goals, the Navy transfers technical expertise to other federal agencies, state and local governments, small and large businesses, non-profit organizations and such public service organizations as schools, hospitals, and foundations. Transfers of hardware, software, management practices and expertise are made in diverse fields, including: analysis and testing, communications, energy, environment, fire and safety, health and medicine, instrumentation, law enforcement, transportation, and marine technology. The Navy Technology Transfer Program provides unique services not available from the private sector and not in competition with the private sector.

Advantages of technology transfer include: (a) cost-effective use of tax dollars expended on RDT&E; (b) solution of critical national problems; and (c) better public relations.

The term technology transfer as used in this report refers to a purposeful, continuous effort to move technical material, devices or information from the point of discovery or development to new users. Technology transfer is a complex mechanism which involves the interactions of people.

## 2. HIGHLIGHTS OF FISCAL YEAR 1977 TECHNOLOGY TRANSFER PROJECTS

In FY 1977 the Navy undertook projects for:

a. Federal Agencies. Pursuant to OMB Circular No. A-109, a major focus of Navy technology transfer is on supporting federal agencies with primary mission responsibilities for domestic programs. The following examples were selected from the 169 projects funded at approximately \$15 million by non-Department of Defense federal agencies during FY 1977.

(1) Environment. Highlights included the following projects:

(a) The Naval Environmental Prediction Research Facility produced a handbook containing evaluations of the suitability of 14 Western Pacific and Indian Ocean harbors as typhoon havens. The evaluations provide an improved basis for ship decision-making by clarifying the risks of taking shelter in port during tropical cyclones of varying intensities. The Department of Commerce is

publishing articles excerpted from the Typhoon Havens Handbook for the Western Pacific and Indian Oceans. On the average, three thousand ships operate in those waters every day. Because the region averages 75 tropical cyclones annually, these ships are confronted with many decisions and possibilities for costly errors. Wide application of the typhoon haven evaluations could save millions of dollars in damage per year. The Naval Environmental Prediction Research Facility will soon publish nine more evaluations of Western Pacific and Indian Ocean harbors. Analysis of Atlantic harbors is being considered.

(b) The Naval Observatory publishes the annual Almanac for Surveyors for the Department of the Interior. The Almanac is the only source of the precise star sightings necessary for surveying and engineering calculations. Over 5,000 copies of the Almanac were distributed in FY 1977.

(c) The Naval Surface Weapons Center designed and fabricated field test units of a mobile wet scrubber and a mobile electrostatic precipitator for the Environmental Protection Agency, which is collecting field data on effectiveness. Field testing will allow the Environmental Protection Agency to advise industries confronting specific clean-up problems.

(2) Construction. Civil Engineering Laboratory work on improved methods of design and construction influenced Department of Transportation guidelines on highway and airport construction. Highway engineers now use a Civil Engineering Laboratory computer program developed for the Department of Transportation to design and analyze culverts. The Civil Engineering Laboratory tested the use of shrinkage compensating cement in airport pavements, which increases the strength and durability of runways, reduces the number of pavement joints, and reduces construction and maintenance costs. Civil Engineering Laboratory guidelines for earthquake-resistant highway bridge design are being considered for inclusion in federal design standards.

b. State and Local Governments. During FY 1977 the Navy provided technical assistance to 37 state and local governments through funded projects totaling less than a quarter of a million dollars. Positive results are indicated by the following examples:

(1) Environment. The David W. Taylor Naval Ship Research and Development Center pollution control expertise proved useful to several states during FY 1977, including Virginia, which is drafting legislation on waste water treatment systems for small pleasure and commercial craft. Virginia procured data on the viability of small craft treatment systems and on the relative impact of discharges on shellfish beds. Washington State obtained advice on operating shipboard waste water holding tanks without generating anaerobic solid wastes which settle to the tank bottoms, are not



discharged, and become very malodorous. Holding tanks on the Washington ferry lines had become parameated with the odor, and waste discharge into land-based sewer lines had become difficult because the odor escaped into the community. The David W. Taylor Naval Ship Research and Development Center advised that design and installation of shipboard aeration systems would solve the problem.

(2) Fire and Safety. The Naval Air Development Center demonstrated the use of helicopter rescue nets in saving victims of tall building fires to Bucks County police and fire units. A Navy net system is available for emergency use by local rescue units. The Naval Air Development Center responded to inquiries about the method from other cities, including San Diego and New Orleans. The Naval Air Development Center also assisted Philadelphia by supplying hand-held infrared imagers capable of detecting the level of fuel in refinery tanks. This determination, critical to safe and effective firefighting, previously could be made only by inserting giant dip sticks into the tanks, a hazardous procedure during a fire. The use of infrared measurement for this purpose is a spin-off of the airborne infrared heat loss survey that the Naval Air Development Center conducted for Philadelphia in FY 1976.

b. Industry and Small Businesses. In FY 1977 the Navy performed projects funded at more than \$4 million by over 70 companies. Typical projects for industry included:

(1) Marine Technology. The Naval Ocean Systems Center designed and operated a seven acre pilot food and energy farm at sea with positive results: giant kelp will grow and reproduce in the ocean farm environment and can be converted to methane by anaerobic digestion; 95 percent of the kelp's water content can be removed; and dried kelp can be used as sheep feed. Preliminary cost-benefit analyses were favorable, and the ocean farm project, originally sponsored by the American Gas Institute, has been taken over by industry. Non-Navy studies are underway on nutrition and methane products.

(2) Analysis and Testing. The Civil Engineering Laboratory operates a unique deep ocean test facility which can simulate greater depths and can accommodate larger objects than other test facilities. In FY 1977 the Civil Engineering Laboratory conducted tests for 9 businesses whose needs could not be met by commercial facilities.

(3) General Assistance. The Navy Technology Transfer Fact Sheet Reader Reply Service provides information on Navy inventions, manufacturing processes, and marketable technologies. The Fact Sheet responded to about 300 requests per month from industry for technical information.

d. Non-Profit Organizations. Non-profit organizations sponsored 28 projects funded at about \$1 million including the following:

(1) General Assistance. The Naval Underwater Systems Center served for the third year as a technical back-up site for the 27 cities participating in the Urban Technology System. The National Science Foundation funds Public Technology, Inc. to operate the Urban Technology System which offers technical advice and resources to medium-sized cities. The Naval Underwater Systems Center has now completed projects for ten different cities in the system, including designing a fluid proportioning system for Eugene, Oregon. The system mixes water with a chemical agent which reduces the water's density, producing "light water" which firefighters can use against petroleum fires. The system operated successfully, averting considerable damage and loss of life.

(2) Communication. The Naval Research Laboratory developed 329 letter-to-sound rules that enable a computer to translate rapidly written text to verbal transmission with 90 percent accuracy. Most errors are single mistakes which can be corrected by the listener. Naval Research Laboratory's letter-to-sound rules are among the first to be generated and tested scientifically, rather than intuitively. Several universities--for example, the University of Maryland, the University of California at Los Angeles, and North Carolina State University--incorporated Naval Research Laboratory letter-to-sound rules into experiments, computer-aided instruction, and artificial speech devices.

e. Other Users. The Navy provided assistance to users who do not fall under the above categories. Examples include:

(1) Law Enforcement. The Naval Observatory is the sole Department of Defense authority on precise time and time interval. The Observatory's clock system and observations of celestial bodies produce highly accurate calculations which are incorporated into the international time scale. In FY 1977 the Observatory issued over 400 legal certifications of time of sunrise, sunset, moon phases, and other astronomical phenomena for court proceedings.

(2) Health and Medicine. Examples of projects include:

(a) The U.S. Naval Academy has applied Navy signal processing theory to brain wave analysis. The work is unique in its application of on-the-shelf engineering equipment to medical use and both simplifies and improves the precision of brain wave measurements. Applications include: (1) measuring processing speed of the left and right brain hemispheres, which is useful in predicting relative grade performance in school; (2) detecting with virtually 100 percent accuracy whether reading problems are neurological or academic in origin; (3) measuring attention levels of students, pilots, and sonar operators; and (4) providing individual brain wave pattern baselines for diagnostic comparison if disorders arise. Academy records on almost two thousand normal midshipmen constitute baselines for physicians, hospitals, and universities. The Academy is disseminating data to the medical community and

industry on signal processing applications. Medical units are testing out the procedures and major producers of EEG equipment consult the Academy to verify results.

(b) The Naval Health Research Center, in cooperation with the University of California at San Diego and the San Diego Children's Hospital and Health Center, has refined and evaluated the Brainstem Auditory Evoked Response (BAER), a non-invasive means of determining the functional and structural integrity of peripheral hearing and of the brainstem auditory pathway. The Brainstem Auditory Evoked Response is unique because its measurements are not modified by drugs with the exception of ethanol (alcohol). This new technique has demonstrated uses in: (1) aiding in the detection of acoustic nerve tumors; (2) determining the state of brainstem death, which can be of utility in determining clinical brain death; (3) aiding in the diagnosis and prognosis of comatose patients; (4) providing a means of evaluating hearing of infants, individuals incapable of cooperating with the examiner, and patients for whom invasive measurement is inadvisable. Further research should demonstrate additional applications of the Brainstem Auditory Evoked Response. This technique is used extensively by the San Diego Children's Hospital and Health Center and employed increasingly in hospitals in the U.S. and around the world.

### 3. MAJOR COMPONENTS OF THE NAVY TECHNOLOGY TRANSFER PROGRAM

The Navy supports or participates in several major programs which provide direct assistance in transferring technology to users and/or producers. The following examples are typical.

- a. Government-Industry Data Exchange Program. This cooperative program is sponsored by the Department of Defense, the National Aeronautics and Space Administration, other federal agencies and the Canadian Department of Defense. The Government-Industry Data Exchange Program is managed by the Navy and provides for the exchange of specialized technical data on systems and equipment. Government and industry members supply information for and retrieve information from four data banks covering reliability-maintainability, engineering, metrology and failure experience. The Government-Industry Data Exchange Program offers two unique services: the ALERT system notifies participants of problem areas, and the Urgent Data Request System permits members to query all participants on specific problems. Participants saved over \$40 million (cost avoidance) in CY 1976, the most recent year for which data is available.
- b. Invention Licensing Program. The Office of Naval Research licenses inventions in the Navy patent portfolio to private industry and small businesses for commercial development. In FY 1977 the Navy granted 13 nonexclusive licenses and the following 6 limited exclusive licenses on:

- (1) A Naval Ocean Systems Center deep submergence electrical assembly which operates reliably at ocean depths of 20,000 feet or more;
  - (2) A high pressure chamber closure which operates manually and requires only two O-ring seals to effect a watertight and gastight closure, developed under a Navy contract with The Research Foundation of State University of New York.
  - (3) A Naval Research Laboratory disinfectant which uses a self-limiting solution and, therefore, can be applied to sensitive materials, including human skin, as well as nonsensitive materials, such as radios and typewriters;
  - (4) An Office of Naval Research (Chicago) syringe apparatus which uses a resilient diaphragm to inject fluids under more even pressure;
  - (5) A Civil Engineering Laboratory method to determine the physical characteristics of a sea floor using sound waves generated by a projectile striking the sea floor; and
  - (6) A Civil Engineering Laboratory electrochemical energy source for diver suit heating which is self-contained and operational to 1,000-foot depths for periods up to 8 hours without replenishment.
- c. Federal Laboratory Consortium for Technology Transfer. Eighteen Navy activities participate in the Federal Laboratory Consortium for Technology Transfer, which seeks to "increase the use of laboratories' unique technical expertise and R&D products toward the solution of problems facing government agencies and private industries". A staff member at the Naval Weapons Center, China Lake, has served as Consortium Chairman since its inception. Under a National Science Foundation grant, the Naval Weapons Center organizes semiannual meetings, publishes a monthly News Items, and compiles the annual Resource Directory.

d. Intergovernmental Assignment of Personnel. The provisions of the Intergovernmental Personnel Act permit short-term assignment of personnel to other branches of government. In FY 1977 the Navy participated in eight Intergovernmental Personnel Act transfers, including the following assignments:

- (1) As its first Intergovernmental Personnel Act project, the Naval Underwater Systems Center assigned an adviser to the Connecticut Conference of Municipalities to analyze technology resources available to 169 Connecticut cities and towns. This adviser has: (a) handled over 100 requests for

assistance in 10 months in such diverse areas as energy conservation, chemical analysis and records management; (b) coordinated workshops for municipal officials on police technology, energy conservation and solid waste management; and (c) organized the testing of computer programs designed to optimize snow removal and associated traffic routing for the 32 Connecticut communities interested in that program.

(2) The Naval Ocean Systems Center assigned a staff member to act as science adviser for the State of Oregon. In FY 1977 the Naval Ocean Systems Center representative handled over 200 requests for assistance from 46 different cities; responded to inquiries from state agencies, legislators, and the governor's office; assisted in establishing a science adviser post for the city of Portland; and responded to inquiries about the program from several jurisdictions, including Utah, Minnesota, Washington, and Puerto Rico.

(3) The Navy Personnel Research and Development Center detailed a full-time science adviser to the San Diego Technology Action Center, an action-oriented local government effort aimed at identifying new technologies applicable to municipal problems, increasing operating efficiency, and reducing costs. With support provided by the Navy Technology Transfer Program through the Navy Personnel Research and Development Center, the Naval Ocean Systems Center, and the Naval Health Research Center, a strong and active technology transfer and utilization effort has been established to serve the needs of both the city and county of San Diego, California. In FY 1977 the science adviser successfully responded to over 300 diverse requests; sponsored technical workshops where experts interact with county officials on such topics as alternative energy sources; and advised the city on establishing a senior citizens skills data bank which could identify potential consultants and volunteer workers. In FY 1977 the San Diego Technology Action Center was responsible for savings (cost avoidance and actual savings) of over a quarter of a million dollars.

(4) A member of the New York State Assembly Scientific Staff was assigned to the Naval Underwater Systems Center to conduct experiments evaluating the Naval Underwater Systems Center technology transfer projects and techniques to determine the applicability of Navy technology and methods to New York problems.

(5) At the request of the Assistant Secretary of Commerce for Science and Technology, the Naval Surface Weapons Center assigned a staff member to the National Technical Information Service of the Department of Commerce for one year to help expedite the transfer of technology to the commercial sector. A technology delivery system involving 16 state universities and federal research and development centers, plus different components of the Department of Commerce, was established and is being tested in the southeastern region of the United States as a result.

#### 4. MEANS OF DISSEMINATING INFORMATION ON NAVY TECHNOLOGY

Technology transfer relies on both person-to-person and passive communication of knowledge. Technology transfer brings together people with a problem and people with a potential solution for the purpose of defining the problem and agreeing on a suitable solution. Discussions must include users, producers, experts, and frequently a "linking agent" or "technology transfer broker" to bridge communication gaps. The Navy supports information sharing and distribution on a continuing basis, including the following sources of information:

a. Focal Points. A network of Technology Transfer Focal Points at approximately 100 Navy activities forms the first line of communication with potential users and producers. The Focal Points provide general information, refer inquires to Navy specialists, and participate in technology transfer projects.

b. Technical Periodicals. The Navy publishes technical periodicals which report state-of-the-art developments in many fields. For example:

(1) The Office of Naval Research produces the monthly Navy Technical Disclosure Bulletin, which transmits scientific and technical information on Navy inventions which were not patented, but which have potential utility. The Bulletin is distributed to approximately 200 representatives of the Navy, other federal agencies, U. S. and foreign patent offices, state and local governments, industries, universities, libraries, and other organizations.

(2) The Naval Material Industrial Resources Office publishes the Manufacturing Technology Bulletin, which notes innovative manufacturing technologies and promotes their application. The Bulletin is distributed bimonthly to almost 1,000 subscribers in government, private industry, and education.

(3) The Naval Observatory publishes the annual Nautical Almanac, which lists the positions of the major planets, the moon, and the brightest stars for every hour of every day. The Nautical Almanac is distributed to over 35,000 subscribers worldwide and is used for navigation at sea and on land. The Observatory also publishes a semi-annual Air Almanac which is comparable to the Nautical Almanac, but contains sky diagrams arranged for the use of pilots. Over 20,000 copies of the Air Almanac were distributed in FY 1977.

(4) The Navy Technology Transfer Fact Sheet reviews technology with promising civilian applications, describes inventions available through the licensing program, and highlights outstanding

projects. The Fact Sheet is distributed monthly to approximately 2,200 businesses, government officials, and military organizations. The Fact Sheet has also been exceptionally useful for informing Navy personnel about Navy technological developments. FY 1977 circulation rose 47 percent over FY 1976, and requests for further information about Fact Sheet articles are increasing.

(5) In FY 1977, the Navy introduced the Navy Technology Transfer Log, distributed to Navy and Marine Corps personnel to promote more informed and effective technology transfer.

(6) The Navy Technology Transfer Projects is published as a companion document to the Technology Transfer Annual Report. The Navy Technology Transfer Projects book contains lists of all reported projects and describes outstanding projects.

c. Conferences and Seminars. The Navy sponsors or participates in conferences, seminars, and exhibits each year. In FY 1977:

(1) The Navy Personnel Research and Development Center sponsored the National Symposium on Utilization of People-Related RDT&E and prepared a summary of the technology transfer session, "Technology Transfer--Science and Technology Applied to Local Government Needs". The document has been distributed to over 200 individuals and organizations and is utilized by Congressional staffs, the Federal Laboratory Consortium for Technology Transfer, the National Science Foundation, other laboratories, universities, and the California Innovation Group, which is a non-profit technology transfer firm which advises its eleven member cities on applying available technology to municipal problems.

(2) The Naval Submarine Medical Research Laboratory exhibited its capabilities in FY 1977 at the American Occupational Health Conference and the American Medical Association Annual Convention. The exhibit depicted three programs which support submarine and diving operational requirements: shallow water saturation diving; longitudinal health study of submarine and diving personnel; and a study of the impact of diving on the long bones of the body. The Laboratory has responded to over 300 requests for reports and a substantial number of follow-up communications, primarily concerning continual monitoring of employee health and technical information on emergency medical care in diving accidents.

(3) The Naval Facilities Engineering Command conducted six seminars describing its Public Works Management System which provides a standard means of planning, coordinating and evaluating property and equipment maintenance systems. The New England Innovation Group, a non-profit technology transfer organization which offers technical advice to New England states and localities, is considering

a pilot program to apply the Public Works Management System in such areas as vehicle maintenance, work reporting, and cost accounting. A civil engineer from the Naval Underwater Systems Center has been detailed under the Intergovernmental Personnel Act to coordinate this project.

d. R&D Work with Technology Transfer Potential. Ongoing R&D work with technology transfer potential is coded on DD Form 1498s and entered as a subset of the Work Unit Information System data bank, part of the Department of Defense RDT&E Management System, operated by the Defense Documentation Center. Over 9,000 Navy projects with technology transfer potential are on file with the Defense Documentation Center. The Navy also submits data on patents and patent applications as a subset of the Defense Documentation Center Technical Report Data Bank.

e. Shock and Vibration Information Center Direct Information Service. The Shock and Vibration Information Center, operated by the Naval Research Laboratory, provides a rapid response subscriber service which answers queries with literature searches and referral to expert investigators and engineers. In FY 1977, the Shock and Vibration Information Center responded to over 100 substantive inquiries from industry and government.

## 5. CONCLUSIONS

The FY 1977 Navy Technology Transfer Program reflected the Navy's continuing commitment to secondary civilian applications of military RDT&E results, and Navy activities displayed an increasing interest in the program. Potential users continued to seek technological guidance not available from the private sector with constructive results as follows:

a. Federal agencies applied Navy expertise to such fields as ship navigation, pollution control and construction. The impact of transferring Navy technology as demonstrated by the typhoon havens evaluations offers potential savings of millions of dollars.

b. State and local governments contacted the Navy for expert technological guidance necessary for effective governing and legislating but often unavailable through normal state and local information channels. Life-saving firefighting technologies were transferred to Philadelphia and to Eugene, Oregon, and money-saving management technology may be applied in eight New England cities. Personnel on assignment to state and local governments handled over 600 requests for assistance in such areas as energy, law enforcement and pollution control.

c. Small and large businesses made use of Navy technology to improve their products and investigated Navy technologies with commercial potential. Businesses exploited unique Navy test and analysis



facilities, such as the deep ocean test facility, to determine the effectiveness and/or limits of their products. The Navy invention licensing program, as well as new technologies such as the ocean farm, provided businesses with opportunities to create new product markets worth millions of dollars.

The Navy Technology Transfer Program constructively benefitted the national economy and helped solve urgent national problems.

# SECTION 3

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## SECTION 3

TABLE 1

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSORS

TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Analysis and Testing	38	3926.9K	5154K	26.8	9.5
Communications	20	2761K	2186K	26.3	21.8
Computer Technology	9	1253K	1104K	11.1	9.5
Energy	23	2904.5K	2117.5K	31.7	22.1
Environment	25	2725K	1898K	24.58	22.45
Fire and Safety	13	1005K	738K	10.1	3.4
Health and Medicine	29	1463.2K	1713K	36.67	42.5
Instrumentation	14	1485.5K	362K	14.2	2.8
Law Enforcement	8	1274K	2198K	9.45	10.6
Marine Technology	18	722K	445K	10.3	5.3
Technological Guidance	5	66K	119K	1.54	1.64
Transportation	14	2360.2K	1143K	22.6	16.4
Miscellaneous	9	325.5K	38K	6.1	.7
SUBTOTAL:	225 <sup>1</sup>	22,271.8K <sup>2</sup>	19,215.5K <sup>3</sup>	231.44 <sup>4</sup>	168.69 <sup>5</sup>

<sup>1</sup> includes 56 DOD projects<sup>2</sup> includes 6718.5, DOD<sup>3</sup> includes 9674K, DOD<sup>4</sup> includes 70.55, DOD<sup>5</sup> includes 56.9, DOD

## TABLE 1

### SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND TECHNOLOGICAL AREA

## STATE AND LOCAL SPONSORS

TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Analysis and Testing	2	.5K	0	0	0
Communications	2	5K	11K	.2	.4
Computer Technology	1	0	0	.1	0
Energy	4	16K	10K	1.4	.6
Environment	13	43K	32K	.9	.4
Fire and Safety	2	0	0	.1	0
Health and Medicine	3	21K	10K	.72	.35
Instrumentation	1	0	0	.1	0
Law Enforcement	2	0	0	.04	0
Marine Technology	1	10K	0	.1	0
Technological Guidance	2	19K	15K	1.4	1
Transportation	1	0	0	.1	0
Miscellaneous	3	0	0	.4	.3
SUBTOTAL:	37	114.5K	78K	5.56	3.05

## SECTION 3

TABLE 1

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND TECHNOLOGICAL AREA

INDUSTRY AND SMALL BUSINESS SPONSORS

TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Analysis and Testing	40	1210.4K	1039K	10.47	7.7
Computer Technology	2	2K	1K	.1	.1
Energy	8	524.5K	370K	9.08	7
Environment	3	97K	127K	1.7	2
Fire and Safety	2	165K	190K	.5	.48
Health and Medicine	1	36K	36K	1	1
Instrumentation	4	251K	204K	.7	.2
Marine Technology	2	11.2K	10K	.1	.1
Transportation	3	50K	50K	1	1
Miscellaneous	5	1834K	2130K	16	18.8
SUBTOTAL:	70	4181.1K	4157K	40.65	38.38

## SECTION 3

TABLE 1

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND TECHNOLOGICAL AREA

NON-PROFIT INSTITUTION SPONSORS

TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Analysis and Testing	3	312K	5K	4.1	.1
Communications	2	71K	40K	1	.5
Energy	3	275K	350K	2.1	2.8
Environment	3	54K	48K	1.2	1
Health and Medicine	12	160K	0	3.81	0
Law Enforcement	1	5K	0	.1	0
Marine Technology	3	54K	14K	1	.2
Technological Guidance	1	11K	0	.3	0
SUBTOTAL:	28	942K	457K	13.61	4.6
TOTAL:	360 <sup>1</sup>	27,509.4K <sup>2</sup>	23,907.5K <sup>3</sup>	291.02 <sup>4</sup>	214.72 <sup>5</sup>
<sup>1</sup> includes 56 DOD projects					
<sup>2</sup> includes 6718.5K, DOD					
<sup>3</sup> includes 9674K, DOD					
<sup>4</sup> includes 70.55, DOD					
<sup>5</sup> includes 56.9, DOD					
	3-4				

## SECTION 3

TABLE 2

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Civil Engineering Laboratory	14	642.05K (170K)*	370K (140K)*	7.2 (1.6)*	3.7 (1.6)*
David Taylor Naval Ship Research and Development Center	23	2868K (1522K)*	4608K (4107K)*	16.3 (1.3)*	8.4 (2.1)*
Government-Industry Data Exchange Program	4	600K	700K	0	0
Naval Air Development Center	5	935K	90K	8.1	1.5
Naval Air Engineering Center	2	0	0	0	0
Naval Air Propulsion Test Center	3	92K (41K)*	0	2 (1)*	0
Naval Air Test Center	4	26K (10K)*	353K	.8 (.1)*	14.2
Naval Biosciences Laboratory	9	368K (5K)*	469K	11.6 (.2)*	14.3
Naval Coastal Systems Laboratory	5	597K (400K)*	1698K (1568K)*	8.7 (2.8)*	10.6 (6.3)*

\* DOD

## SECTION 3

TABLE 2

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Naval Environmental Prediction Research Facility	1	0	0	0	0
Naval Explosive Ordnance Disposal Facility	4	0	0	.35	0
Naval Facilities Engineering Command	1	6.5K (6.5K)*	10K (10K)*	0	0
Naval Medical Research and Development Command	16	434.2K (152K)*	335K (135K)*	16.91 (6.05)*	18.74 (8.7)*
Naval Observatory	4	23K (10K)*	23K (10K)*	.7 (.3)*	.7 (.3)*
Naval Oceanographic Office	9	502.4K (150K)*	182.5K (180K)*	4.7 (3)*	3.9 (3.5)*
Naval Ocean Systems Center	30	5805K (2502K)*	4405K (2528K)*	47.2 (20.5)*	34.8 (17.3)*

\* DOD



## SECTION 3

TABLE 2

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Naval Ordnance Station (Indian Head)	2	250K (250K)*	300K (300K)*	5 (5)*	6 (6)*
Naval Ordnance Station (Louisville)	1	0	0	0	0
Naval Postgraduate School	1	12K (12K)*	0	0	0
Naval Research Laboratory	17	2154.02K (329K)*	2172K (135K)*	23.3 (5.2)*	21.5 (2.2)*
Naval Sea Systems Command	1	600K	0	10	0
Naval Surface Weapons Center	17	1546.7K (39K)*	515K (24K)*	20.3 (.6)*	5.05 (.3)*
Naval Underwater Systems Center	15	1862K (109K)*	400K (142K)*	10.2 (2.5)*	4 (2)*
Naval Weapons Center	20	1559K (100K)*	1813K (25K)*	9.3 (.9)*	9.9 (.4)*

\* DOD

## SECTION 3

TABLE 2

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Navy Clothing and Textile Research Facility	1	85K (85K)*	0	1.5 (1.5)*	0
Navy Personnel Research and Development Center	1	27K	29K	1	1
Navy Photographic Center	1	28K (28K)*	0	1.5 (1.5)*	0
Office of Naval Research	9	600K (248K)*	735K (370K)*	10.9 (4.5)*	10.2 (6.2)*
Office of Naval Research (Chicago)	2	550K (550K)*	0	12 (12)*	0
U.S. Naval Academy	3	99K	8K	2.3	.2
SUBTOTAL:	225 (56)*	22,271.8K (6718.5K)*	19,215.5K (9674K)*	231.86 (70.55)*	168.69 (56.9)*

\* DOD

## SECTION 3

TABLE 2

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

STATE AND LOCAL SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Civil Engineering Laboratory	1	10K	0	.1	0
David Taylor Naval Ship Research and Development Center	4	0	0	.2	0
Naval Air Development Center	7	0	0	.9	0
Naval Biosciences Laboratory	1	21K	10K	.6	.3
Naval Medical Research and Development Command	2	0	0	.06	.05
Naval Oceanographic Office	3	.5K	0	0	0
Naval Ocean Systems Center	3	0	0	0	0
Naval Postgraduate School	1	29K	0	.5	0
Naval Underwater Systems Center	9	40K	36K	2.7	2
Naval Weapons Center	4	14K	32K	.2	.4
Navy Personnel Research and Development Center	2	0	0	.3	.3
SUBTOTAL:	37	114.5K	78K	5.56	3.05

## SECTION 3

TABLE 2

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

INDUSTRY AND SMALL BUSINESS SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Civil Engineering Laboratory	10	24.65K	0	.07	0
David Taylor Naval Ship Research and Development Center	11	387K	263K	6.1	4.3
Government-Industry Data Exchange Program	4	600K	700K	0	0
Naval Air Development Center	1	0	0	.1	0
Naval Biosciences Laboratory	2	52K	66K	1.6	1.7
Naval Coastal Systems Laboratory	1	29K	29K	.2	.2
Naval Oceanographic Office	4	2K	4K	0	0
Naval Ocean Systems Center	6	204K	155K	3.7	2.6
Naval Ordnance Station (Indian Head)	10	2224.5K	2515K	24.5	26.5
Naval Research Laboratory	4	2.98K	0	0	0
Naval Surface Weapons Center	1	100K	100K	0	0
Naval Underwater Systems Center	2	2K	1K	.1	.1
	3-10				

## SECTION 3

TABLE 2

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

INDUSTRY AND SMALL BUSINESS SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Naval Weapons Center	12	503K	274K	3.2	2.2
Office of Naval Research	1	50K	50K	1	1
U.S. Naval Academy	1	0	0	.08	0
SUBTOTAL:	70	4181.3K	4157K	40.65	38.6

## SECTION 3

TABLE 2

## SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TYPE OF SPONSOR AND PERFORMING ACTIVITY

NON-PROFIT INSTITUTION SPONSORS

PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
		FY 1977	FY 1978	FY 1977	FY 1978
Naval Air Development Center	2	0	0	.2	0
Naval Air Engineering Center	1	0	0	0	0
Naval Coastal Systems Laboratory	1	308K	0	4	0
Naval Medical Research and Development Command	10	160K	0	3.61	0
Naval Oceanographic Office	1	0	0	0	0
Naval Ocean Research and Development Activity	1	1K	0	0	0
Naval Ocean Systems Center	4	107K	62K	1.7	.7
Naval Research Laboratory	2	345K	390K	3.1	3.3
Naval Surface Weapons Center	1	4K	5K	.1	.1
Naval Underwater Systems Center	4	17K	0	.4	0
Naval Photographic Center	1	0	0	.5	.5
SUBTOTAL:	28	942K	457K	13.61	4.6
TOTAL:	360	27,509K	23,907K	291.02	214.72

3-12

## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Analysis and Testing	Federal	38	3926.9K	5154K	26.8	9.5
	State and Local	2	.5	0	0	0
	Industry and Small Business	40	1210.4K	1039K	10.47	7.7
	Non-Profit Institution	3	312K	5K	4.1	.1
	SUBTOTAL:	83	5449.8K	6198K	41.37	17.3
Communications	Federal	20	2761K	2186K	26.3	21.8
	State and Local	2	5K	11K	.2	.4
	Non-Profit Institution	2	71K	40K	1	.5
	SUBTOTAL:	24	2837K	2237K	27.5	22.7
		3-13				

## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Computer Technology	Federal	9	1253K	1104K	11.1	9.5
	State and Local	1	0	0	.1	0
	Non-Profit Institution	2	2	1	.1	.1
	SUBTOTAL:	12	1255K	1105K	11.3	9.6
Energy	Federal	23	2904.5K	2117.5K	31.7	22.1
	State and Local	4	16K	10K	1.4	.6
	Industry and Small Business	8	524.5K	370K	9.08	7
	Non-Profit Institution	3	275K	350K	2.1	2.8
	SUBTOTAL:	38	3720K	2847.5K	44.28	32.5
		3-14				



## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Environment	Federal	25	2725K	1898K	24.6	22.45
	State and Local	13	43K	32K	.9	.4
	Industry and Small Business	3	97K	127K	1.7	2
	Non-Profit Institution	3	54K	48K	1.2	1
	SUBTOTAL:	44	2919K	2105K	28.4	25.85
Fire and Safety	Federal	13	1005K	738K	10.1	3.4
	State and Local	2	0	0	.1	0
	Industry and Small Business	2	165K	190K	.5	.5
	SUBTOTAL:	17	1170K	928K	10.7	3.9
		3-15				

## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Health and Medicine	Federal	29	1463.2K	1713K	36.67	42.5
	State and Local	3	21K	10K	.72	.35
	Industry and Small Business	1	36K	36K	1	1
	Non-Profit Institution	12	160K	0	3.81	0
	SUBTOTAL:	45	1680.2K	1759K	42.2	43.85
Instrumentation	Federal	14	1485.5K	362K	14.2	2.8
	State and Local	1	0	0	.1	0
	Industry and Small Business	4	251K	204K	.7	.2
	SUBTOTAL:	19	1736.5K	566K	15	3
		3-16				

## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Law Enforcement	Federal	8	1274K	2198K	9.45	10.6
	State and Local	2	0	0	.04	0
	Non-Profit Institution	1	5K	0	.1	0
	SUBTOTAL:	11	1279K	2198K	9.59	10.6
Marine Technology	Federal	18	722K	445K	10.3	5.3
	State and Local	1	10K	0	.1	0
	Industry and Small Business	2	11.2K	10K	.1	.1
	Non-Profit Institution	3	54K	14K	1	.2
	SUBTOTAL:	24	797.2K	469K	11.5	5.6
		3-17				

## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Technological Guidance	Federal	5	66K	119K	1.54	1.64
	State and Local	2	19K	15K	1.4	1
	Non-Profit Institution	1	11K	0	.3	0
	SUBTOTAL:	8	96K	134K	3.24	2.64
Transportation	Federal	14	2360.2K	1143K	22.6	16.4
	State and Local	1	0	0	.1	0
	Industry and Small Business	3	50K	50K	1	1
	SUBTOTAL:	18	2410.2K	1193K	23.7	17.4
		3-18				

## SECTION 3

TABLE 3

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND TYPE OF SPONSOR

TECHNOLOGICAL AREA	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING			MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978	
Miscellaneous	Federal	9	326K	38K	6.1		.7
	State and Local	3	0	0	.4		.3
	Industry and Small Business	<u>5</u>	1834K	2130K	16		19
	SUBTOTAL:	17	2160K	2168K	22.5		20
	TOTAL:	360 <sup>1</sup>	27,509.9K <sup>2</sup>	23,907.5K <sup>3</sup>	291.28 <sup>4</sup>		214.94 <sup>5</sup>
		<sup>1</sup> includes 56 DOD projects		<sup>4</sup> includes 70.55, DOD			
		<sup>2</sup> includes 6718.5K, DOD		<sup>5</sup> includes 56.9, DOD			
		<sup>3</sup> includes 9674K, DOD					
		3-19					

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Civil Engineering Laboratory	Federal	14	642.05K (170K)*	370K (140K)*	7.2 (1.6)*	3.7 (1.6)*
	State and Local	1	10K	0	.1	0
	Industry and Small Business	10	24.65K	0	.07	0
	SUBTOTAL:	25	676.7K	370K	7.37	3.7
David Taylor Naval Ship Research and Development Center	Federal	23	2868K (1522K)*	4608K (4107K)*	16.3 (1.3)*	8.4 (2.1)*
	State and Local	4	0	0	.2	0
	Industry and Small Business	11	387K	263K	6.1	4.3
	SUBTOTAL:	38	3255K	4871K	22.6	12.7
Government-Industry Data Exchange Program	Federal	4	600K	700K	0	0
	Industry and Small Business	4	600K	700K	0	0
	SUBTOTAL:	8	1200K	1400K	0	0
		3-20				

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Air Development Center	Federal	5	935K	90K	8.1	1.5
	State and Local	7	0	0	.9	0
	Industry and Small Business	1	0	0	.1	0
	Non-Profit Institution	2	0	0	.2	0
	SUBTOTAL:	15	935K	90K	9.3	1.5
Naval Air Engineering Center	Federal	2	0	0	0	0
	Non-Profit Institution	1	0	0	0	0
	SUBTOTAL:	3	0	0	0	0
Naval Air Propulsion Test Center	Federal	3	92K (41K)*	0	2 (1)*	0

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Air Test Center	Federal	4	26K (10K)*	353K	.8 (.1)*	14.2
	Federal	9	368K (5K)*	469K	11.6 (.2)*	14.3
Naval Biosciences Laboratory	State and Local	1	21K	10K	.6	.3
	Industry and Small Business	2	52K	66K	1.6	1.7
Naval Coastal Systems Laboratory	SUBTOTAL:	12	441K	545K	13.8	16.3
	Federal	5	597K (400K)*	1698K (1568K)*	8.7 (2.8)*	10.6 (6.3)*
Naval Environmental Prediction Research Facility	Industry and Small Business	1	29K	29K	.2	.2
	Non-Profit Institution	1	308K	0	4	0
Naval Environmental Prediction Research Facility	SUBTOTAL:	7	934K	1727K	12.9	10.8
	Federal	1	0	0	0	0

\* DOD

3-22



## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Explosive Ordnance Disposal Facility	Federal	4	0	0	.35	0
	Federal	1	6.5K (6.5K)*	10K (10K)*	0	0
	Federal	16	434.2K (152K)*	335K (135K)*	16.91 (6.05)*	18.74 (8.7)*
	State and Local	2	0	0	.06	.05
	Non-Profit Institution	10	160K	0	3.61	0
Naval Observatory	SUBTOTAL:	28	594.2K	335K	20.58	18.79
	Federal	4	23K (10K)*	23K (10K)*	.7 (.3)*	.7 (.3)*
		3-23				

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Oceanographic Office	Federal	9	502.4K (150K)*	182.5K (180K)*	4.7 (3)*	3.9 (3.5)*
	State and Local	3	.5K	0	0	0
	Industry and Small Business	4	2K	4K	0	0
	Non-Profit Institution	1	0	0	0	0
	SUBTOTAL:	17	504.9K	186.5K	4.7	3.9
Naval Ocean Research and Development Activity	Non-Profit Institution	1	1K	0	0	0
	Federal	30	5805K (2502K)*	4405K (2528K)*	47.2 (20.5)*	34.8 (17.3)*
	State and Local	3	0	0	0	0
	Industry and Small Business	6	204K	155K	3.7	2.6
	Non-Profit Institution	4	107K	62K	1.7	.7
	SUBTOTAL:	43	6116K	4622K	52.6	38.1
		3-24				

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Ordnance Station (Indian Head)	Federal	2	250K (250K)*	300K (300K)*	5 (5)*	6 (6)*
	Industry and Small Business	10	2224.5K	2515K	24.5	26.5
	SUBTOTAL:	12	2474.5K	2815K	29.5	32.5
Naval Ordnance Station (Louisville)	Federal	1	0	0	0	0
	Federal		12K (12K)*	0	0	0
	State and Local	1	29K	0	.5	0
Naval Postgraduate School	SUBTOTAL:	2	41K	0	.5	0
	Federal	17	2154.02K (329K)*	2172K (135K)*	23.3 (5.2)*	21.5 (2.2)*
	Industry and Small Business	4	2.98K	0	0	0
Naval Research Laboratory	Non-Profit Institution	2	345K	390K	3.1	3.3
	SUBTOTAL:	23	2502K	2562K	26.4	24.8
		3-25				

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Sea Systems Command	Federal	1	600K	0	10	0
	Federal	17	1546.7K (39K)*	515K (24K)*	20.3 (.6)*	5.05 (.3)*
	Industry and Small Business	1	100K	100K	0	0
	Non-Profit Institution	1	4K	5K	.1	.1
	SUBTOTAL:	19	1650.7K	620K	20.4	5.15
Naval Underwater Systems Center	Federal	15	1862K (109K)*	400K (142K)*	10.2 (2.5)*	4 (2)*
	State and Local	9	40K	36K	2.3	2
	Industry and Small Business	2	2K	1K	.1	.1
	Non-Profit Institution	4	17K	0	.4	0
	SUBTOTAL:	30	1921K	437K	13	6.1
		3-26				

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Weapons Center	Federal	20	1559K (100K)*	1813K (25K)*	9.3 (.9)*	9.9 (.4)*
	State and Local	4	14K	32K	.2	.4
	Industry and Small Business	12	503K	274K	3.2	2.2
	SUBTOTAL:	36	2076K	2119K	12.7	12.5
Navy Clothing and Textile Research Facility	Federal	1	85K (85K)*	0	1.5 (1.5)*	0
	Federal	1	27K	29K	1	1
	State and Local	2	0	0	.3	.3
	SUBTOTAL:	3	27K	29K	1.3	1.3
Navy Personnel Research and Development Center	Federal	1	28K (28K)*	0	1.5 (1.5)*	0
	Non-Profit Institution	1	0	0	.5	.5
	SUBTOTAL:	2	28K	0	2	.5
		3-27				

\* DOD

## SECTION 3

TABLE 4

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TYPE OF SPONSOR

PERFORMING ACTIVITY	TYPE OF SPONSOR	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Office of Naval Research	Federal	9	600K (248K) *	735K (370K) *	10.9 (4.5) *	10.2 (6.2) *
	Industry and Small Business	1	50K	50K	1	1
	SUBTOTAL:	10	650K	785K	11.9	11.2
Office of Naval Research (Chicago)	Federal	2	550K (550K) *	0	12 (12) *	0
	Federal	3	99K	8K	2.3	.2
U.S. Naval Academy	Industry and Small Business	1	0	0	.08	0
	SUBTOTAL:	4	99K	8K	2.38	.2
	TOTAL:	360 (56) *	27,509.5K (6718.5K) *	23,907.5K (9674K) *	291.28 (70.55) *	214.94 (56.9) *
			*			
		3-28				

\* DOD

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Civil Engineering Laboratory	Analysis and Testing	8	23.45K	0	.06	.01
	Computer Technology	1	6K	0	.1	0
	Environment	1	205K	125K	2	1.5
	Health and Medicine	1	140K	100K	1.5	1
	Marine Technology	10	178.2K	115K	2.2	.8
	Transportation	2	28K	25K	.1	.4
	Miscellaneous	2	96K	5K	1.4	0
	SUBTOTAL:	25	676.65K	370K	7.36	3.71
David Taylor Naval Ship Research and Development Center	Analysis and Testing	30	3149K	4836K	20.7	12.1
	Environment	6	106K	35K	1.8	.6
	Transportation	1	0	0	.1	0
	Miscellaneous	1	0	0	0	0
	SUBTOTAL:	38	3255K	4871K	22.6	12.7
Government-Industry Data Exchange Program	Analysis and Testing	4	600K	700K	0	0
	Fire and Safety	2	300K	350K	0	0
	Instrumentation	2	300K	350K	0	0
	SUBTOTAL:	8	1200K	1400K	0	0
		3-29				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Air Development Center	Analysis and Testing	1	0	0	.1	0
	Computer Technology	2	0	0	.1	0
	Energy	1	0	0	.3	0
	Environment	1	0	0	.1	0
	Fire and Safety	1	0	0	.1	0
	Health and Medicine	4	0	30K	.3	.5
	Instrumentation	3	935K	60K	8.1	1
	Technological Guidance	1	0	0	.1	0
	Miscellaneous	1	0	0	.1	0
	SUBTOTAL:	15	935K	90K	9.3	1.5
Naval Air Engineering Center Naval Air Propulsion Test Center	Analysis and Testing	3	0	0	0	0
	Energy	1	41K	0	1	0
	Transportation	2	51K	0	1	0
	SUBTOTAL:	3	92K	0	2	0
		3-30				



## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Air Test Center	Communications	1	3K	3K	.2	.2
	Environment	1	0	200K	0	8
	Transportation	2	23K	150K	.6	6
	SUBTOTAL:	4	26K	353K	.8	14.2
Naval Biosciences Laboratory	Analysis and Testing	1	26K	30K	.6	.7
	Health and Medicine	11	415K	515K	13.2	15.6
	SUBTOTAL:	12	441K	545K	13.8	16.3
Naval Coastal Systems Laboratory	Analysis and Testing	1	308K	0	4	0
	Environment	2	197K	130K	5.9	4.3
	Instrumentation	2	134K	29K	1.7	.2
	Law Enforcement	1	256K	1468K	.7	5.6
	Marine Technology	1	39K	100K	.6	.7
	SUBTOTAL:	7	934K	1727K	12.9	10.8
Naval Environmental Prediction Research Facility	Environment	1	0	0	0	0
		3-31				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Explosive Ordnance Disposal Facility	Law Enforcement	4	0	0	.35	0
	Miscellaneous	1	6.5K	10K	0	0
	Analysis and Testing	1	168K	0	.5	0
	Health and Medicine	24	426.2K	335K	20	18.75
	Law Enforcement	1	0	0	.04	0
Naval Facilities Engineering Command	Technological Guidance	2	0	0	.04	.04
	SUBTOTAL:	28	594.2K	335K	20.58	18.79
Naval Observatory	Miscellaneous	4	23K	23K	.7	.7
	Analysis and Testing	6	1.4K	0	.1	0
	Energy	3	351.5K	2.5K	1.3	.1
	Environment	5	2K	4K	.3	.3
	Instrumentation	1	0	0	0	0
Naval Oceanographic Office	Law Enforcement	1	0	0	0	0
	Marine Technology	1	150K	180K	3	3.5
	SUBTOTAL:	17	504.9K	186.5K	4.7	3.9
		3-32				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Ocean Research and Development Activity	Marine Technology	1	1K	0	0	0
	Analysis and Testing	2	45K	22K	.9	.5
	Communications	10	1352K	1388K	11.6	10.6
	Computer Technology	5	974K	804K	7.7	5.2
	Energy	2	54K	0	1	0
	Environment	7	682K	627K	7.6	5.5
	Health and Medicine	2	153K	205K	1.8	2.8
	Law Enforcement	3	1018K	730K	8.4	5
	Marine Technology	7	204K	74K	2.5	.6
	Transportation	4	1634K	772K	11.1	7.9
Naval Ordnance Station (Indian Head)	Miscellaneous	1	0	0	0	0
	SUBTOTAL:	43	6116K	4622K	52.6	38.1
	Communications	1	250K	300K	5	6
	Energy	6	375.5K	370K	8	7
	Fire and Safety	1	15K	15K	.5	.5
		3-33				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
NAVORDSTA (Indian Head)	Transportation	1	0	0	0	0
	Miscellaneous	3	1834K	2130K	16	19
	SUBTOTAL:	12	2474.5K	2815K	29.5	32.5
Naval Ordnance Station (Louisville)	Miscellaneous	1	0	0	0	0
	Environment	1	29K	0	.5	0
	Marine Technology	1	12K	0	0	0
	SUBTOTAL:	2	41K	0	.5	0
Naval Research Laboratory	Analysis and Testing	4	2.98K	0	0	0
	Communications	4	320K	175K	5.2	2.7
	Energy	6	1441K	1810K	13.2	16.8
	Environment	5	122K	27K	1.7	.4
	Fire and Safety	2	94K	0	1.2	0
	Health and Medicine	2	522K	550K	5.1	4.9
	SUBTOTAL:	23	2501.98K	2562K	26.4	24.8
Naval Sea Systems Command	Energy	1	600K	0	10	0
		3-34				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Naval Surface Weapons Center	Analysis and Testing	7	341K	257K	2.1	1
	Communications	1	76K	50K	1	.4
	Environment	1	337K	15K	3	.25
	Fire and Safety	3	194K	63K	3.4	1
	Health and Medicine	1	24K	24K	.3	.3
	Instrumentation	3	223.5K	20K	3.8	.2
	Transportation	3	455.2K	191K	6.8	.2
	SUBTOTAL:	19	1650.7K	620K	20.4	5.15
Naval Underwater Systems Center	Analysis and Testing	1	0	0	0	0
	Communications	5	708K	91K	2.5	.5
	Computer Technology	3	125K	101K	.4	.4
	Energy	6	68K	76K	1.6	2
	Environment	5	893K	142K	5.3	2
	Fire and Safety	1	0	0	0	0
	Instrumentation	3	18K	7K	.3	.1
	Law Enforcement	1	5K	0	.1	0
	Marine Technology	1	5K	0	.1	0
		3-35				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
NUSC (Contd)	Technological Guidance	3	30K	15K	1.7	1
	Transportation	1	69K	5K	1	.1
	SUBTOTAL:	30	1921K	437K	13	6.1
Naval Weapons Center	Analysis and Testing	12	394K	353K	3.3	3
	Energy	7	589K	401K	4	4.4
	Environment	7	504K	775K	1.9	2.1
	Fire and Safety	5	454K	500K	2.5	2.4
	Instrumentation	4	96K	0	.6	0
	Technological Guidance	1	39K	90K	.4	.6
	SUBTOTAL:	36	2076K	2119K	12.7	12.5
Navy Clothing and Textile Research Facility	Fire and Safety	1	85K	0	1.5	0
Navy Personnel Research and Development Center	Technological Guidance	1	27K	29K	1	1
	Miscellaneous	2	0	0	.3	.3
	SUBTOTAL:	3	27K	29K	1.3	1.3
		3-36				

## SECTION 3

TABLE 5

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY PERFORMING ACTIVITY AND TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 1977	FY 1978	FY 1977	FY 1978
Navy Photographic Center	Environment	1	0	0	.5	.5
	Fire and Safety	1	28K	0	1.5	0
	SUBTOTAL:	2	28K	0	2	.5
Office of Naval Research	Communications	2	128K	230K	2	2.3
	Computer Technology	1	150K	200K	3	4
	Energy	2	142K	180K	2.5	2
	Environment	1	25K	25K	.4	.4
	Instrumentation	1	30K	100K	.5	1.5
	Marine Technology	1	25K	0	.5	0
	Transportation	2	150K	50K	3	1
Office of Naval Research (Chicago)	SUBTOTAL:	10	650K	785K	11.9	11.2
	Analysis and Testing	1	350K	0	8	0
	Miscellaneous	1	200K	0	4	0
	SUBTOTAL:	2	550K	0	12	0
U.S. Naval Academy	Energy	4	99K	8K	2.38	.2
	SUBTOTAL:	4	99K	8K	2.38	.2
TOTAL:		360	27,509.4K	23,907.5K	291.27	214.95
		(56, DOD)	(6718.5K, DOD)	(9674K, DOD)	(70.55, DOD)	(56.9, DOD)
		3-37				

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Brookhaven National Laboratory, Nuclear Regulatory Commission	Instrumentation	1	16K	7K	.1	.1
	Miscellaneous	1	10K	10K	.2	.2
	Health and Medicine	1	0	0	.01	0
	Analysis and Testing	3	1675K	4100K	5	2
	Communications	3	760K	824K	6.2	5.3
	Computer Technology	2	124K	358K	1.5	2.1
	SUBTOTAL:	8	2559K	5282K	12.7	9.4
Defense Communications Agency	Communications	3	524K	425K	5	5
	Miscellaneous	1	10K	10K	.3	.3
	SUBTOTAL:	4	534K	435K	5.3	5.3
Defense Intelligence Agency	Health and Medicine	1	0	0	0	0
	Health and Medicine	1	0	0	0	0
	Analysis and Testing	1	175K	0	4	0
	Communications	1	250K	300K	5	6
Defense Logistics Agency	Miscellaneous	1	200K	0	4	0
	SUBTOTAL:	3	625K	300K	13	6
		3-38				



## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Defense Mapping Agency	Marine Technology	2	114K	190K	2.1	2.45
Defense Mapping Agency	Miscellaneous	1	0	0	0	0
Hydrographic Center	Environment	3	717.5K	683K	.7	.8
Department of Commerce	Health and Medicine	1	40K	42K	1	1
	Technological Guidance	1	0	0	.05	0
	SUBTOTAL:	5	757.5K	725K	1.75	1.8
DOD Tri-Service Medical Information System	Health and Medicine	1	50K	100K	.6	1.4
Department of Health, Education and Welfare	Health and Medicine	1	47K	82K	1	2
Department of the Interior	Marine Technology	1	3.5K	0	.05	0
Department of Justice	Health and Medicine	1	0	0	0	0
Department of Transportation	Analysis and Testing	1	0	0	0	0
	Communications	1	88.5K	0	.5	0
	Computer Technology	1	61.5K	50K	.15	.15
	Energy	1	.5K	0	.05	0
	Environment	1	1	0	.1	0

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
DOT (Contd)	Health and Medicine	1	100K	200K	10	10
	Instrumentation	4	468.5K	30K	4.1	.5
	Marine Technology	1	91.5K	0	1.3	0
	SUBTOTAL:	11	811.5K	280K	16.2	10.65
	Analysis and Testing	2	165K	45K	1.6	.4
	Energy	8	909K	1093K	9.4	11.3
Energy Research and Development Administration	Environment	2	138K	0	2.4	0
	Health and Medicine	1	70K	200K	2	6
	Marine Technology	6	175K	135K	2	.9
	Transportation	1	100K	0	2	0
	SUBTOTAL:	20	1557K	1473K	19.4	18.6
Environmental Protection Agency	Energy	1	25K	0	1	0
	Environment	6	523K	172K	8.4	4.95
	Health and Medicine	1	50K	50K	.6	.6
	SUBTOTAL:	8	598K	222K	10	5.55
Federal Aviation Administration	Communications	2	292.5K	100K	1.15	.15
	Fire and Safety	1	20K	0	.2	0
	Transportation	2	113K	185K	.3	2.1
	SUBTOTAL:	5	425.5K	285K	1.65	2.25
		3-40				

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Federal Bureau of Investigation	Law Enforcement	2	0	0	.15	0
Federal Energy Administration	Energy	1	58K	0	1	0
Federal Highway Administration, Dept. of Transportation	Computer Technology	1	6K	0	.1	0
	Transportation	1	140K	44K	2	.4
	Miscellaneous	2	96K	5K	1.4	0
	SUBTOTAL:	4	242K	49K	3.5	.4
Federal Laboratory Consortium for Technology Transfer	Technological Guidance	2	0	0	.02	.02
Federal Railroad Administration, Dept. of Transportation	Transportation	1	268K	142K	4.3	1.5
Food and Drug Administration	Health and Medicine	1	30K	35K	1	1
George C. Marshall Flight Center, NASA	Instrumentation	1	166.5K	0	3	0
Goddard Space Flight Center, NASA	Communications	1	262.5K	40K	.65	.05
	Instrumentation	1	25K	5K	.5	.1
	SUBTOTAL:	2	287.5K	45K	1.15	.15
		3-41				

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Harry Diamond Laboratory, U.S. Army Kelly Air Force Base, San Antonio, TX	Analysis and Testing	1	50K	50K	0	0
	Energy	1	0	0	0	0
	Energy	1	13K	0	.2	0
	Environment	1	12K	0	0	0
	Instrumentation	1	9K	0	0	0
L.B.J. Space Center, NASA	SUBTOTAL:	2	21K	0	0	0
	Analysis and Testing	1	115K	52K	1.5	.9
	Instrumentation	1	32K	15K	.3	.1
	SUBTOTAL:	2	147K	67K	1.8	1
Lewis Research Center, NASA	Analysis and Testing	1	3K	0	.1	0
	Energy	1	1K	1K	.1	.1
	SUBTOTAL:	2	4K	1K	.2	.1
Maritime Administration	Analysis and Testing	2	45K	32K	.2	.3
	Environment	1	16K	30K	.3	.5
	SUBTOTAL:	3	61K	62K	.5	.8
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
National Aeronautics and Space Administration	Analysis and Testing	5	236K	79K	1.15	.8
	Communications	2	93K	50K	1.2	.4
	Energy	2	304K	0	5.1	0
	Environment	1	25K	25K	.4	.4
	Fire and Safety	1	24K	0	.1	0
	Health and Medicine	1	0	30K	0	.5
	Instrumentation	1	30K	100K	.5	1.5
	Marine Technology	1	60K	0	.7	0
	Transportation	3	660K	0	5.5	0
	SUBTOTAL:	17	1432K	284K	14.65	3.6
National Aviation Facilities Experimental Center, Federal Aviation Administration	Communication	1	88.5K	0	.5	0
	Miscellaneous	1	.75	.75	.05	.05
	Health and Medicine	3	595K	550K	9.6	6.9
	Analysis and Testing	1	.4K	0	0	0
	Energy	1	163K	138K	1.6	2
	Environment	1	60K	60K	1	.9
	SUBTOTAL:	2	223K	198K	2.6	2.9
		3-43				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
National Highway Traffic Safety Administration	Health and Medicine	1	140K	100K	1.5	1
National Institute for Occupational Safety and Health	Environment	1	46K	0	.6	0
National Institutes of Health	Health and Medicine	4	33.06K	25K	.87	.7
National Institutes of Mental Health	Health and Medicine	1	0	0	0	0
National Marine Fisheries Service	Analysis and Testing	1	.5K	0	0	0
	Environment	1	0	0	.075	.075
	Marine Technology	3	36K	0	.5	0
	SUBTOTAL:	5	36.5	0	.575	.075
National Oceanic and Atmospheric Administration	Analysis and Testing	4	71K	55K	.7	.6
	Energy	1	.5K	2.5K	.1	.1
	Environment	2	299.5K	0	.075	.075
	Marine Technology	1	15K	15K	.1	.1
	SUBTOTAL:	8	387K	72.5K	.975	.875
National Research Council	Miscellaneous	1	.75K	.75K	.05	.05
National Science Foundation	Technological Guidance	4	52.5K	104.5K	.92	1.12
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
National Weather Service	Environment	1	0	0	.075	.075
Naval Facilities Engineering Command	Environment	1	235K	228K	2	1.5
Naval Material Command	Miscellaneous	1	6.5K	10K	0	0
Naval Medical Research and Development Command	Health and Medicine	4	140.06K	135K	5.66	7.5
Naval Medical Research Institute	Health and Medicine	1	15K	0	.25	0
Naval Oceanographic Office	Marine Technology	1	75K	90K	1.5	1.75
Naval Regional Medical Center (San Diego)	Health and Medicine	1	0	0	.2	1.2
Naval Sea Systems Command	Energy	1	300K	0	5	0
	Miscellaneous	1	0	0	0	0
	SUBTOTAL:	2	300K	0	5	0
Naval Surface Weapons Center	Analysis and Testing	1	41K	0	1	0
North American Air Defense Center	Communications	1	62K	88K	.8	1
Nuclear Regulatory Commission	Analysis and Testing	1	27K	10K	.3	.1
	Energy	2	852K	850K	6.5	8
	Fire and Safety	2	150K	40K	2.4	.5
	SUBTOTAL:	5	1029K	900K	9.2	8.6
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Office of Hazardous Materials, DOT	Fire and Safety	1	44K	23K	1	.5
	Communications	2	210K	170K	3.5	2.2
	Computer Technology	1	75K	100K	1.5	2
	Marine Technology	1	12K	0	0	0
	SUBTOTAL:	4	285K	270K	5	4.2
Rome Air Development Center, USAF	Computer Technology	1	164K	46.5K	1.35	.3
Rural Development Service, USDA	Computer Technology	1	0	0	0	0
Rural Electrification Administration, USDA	Communications	1	3K	3K	.2	.2
Small Business Administration	Technological Guidance	1	0	0	.05	0
Smithsonian Institution	Environment	1	0	0	0	0
State Department	Miscellaneous	1	.75K	.75K	.05	.05
Urban Mass Transportation Administration	Transportation	1	69K	5K	1	.1
U.S. Air Force	Analysis and Testing	1	15K	0	.3	0
	Communications	2	28.5K	25K	.45	.2
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
USAF (Contd)	Computer Technology	1	164K	46.5K	1.35	.3
	Energy	1	0	0	0	0
	Fire and Safety	1	79K	0	1	0
	Law Enforcement	1	256K	1468K	.7	5.6
	Miscellaneous	1	.75K	.75K	.05	.05
	SUBTOTAL:	8	543.25K	1540.25K	3.85	6.15
U.S. Air Force Academy	Health and Medicine	1	0	0	0	0
U.S. Air Force Avionics Laboratory	Computer Technology	1	30K	0	.1	0
U.S. Air Force Civil Engineering Center	Fire and Safety	1	85K	0	1.5	0
U.S. Air Force Communications Service	Communications	1	25K	120K	.4	1
U.S. Air Force Data Automation Agency	Computer Technology	1	40K	3K	.1	0
U.S. Air Force Data Service Center	Analysis and Testing	1	50K	50K	0	0
U.S. Air Force Electronics Systems Program	Law Enforcement	1	200K	230K	1.6	1.6
U.S. Air Force Engineering Center	Energy	1	15K	25K	.2	.4
U.S. Air Force Weapons Laboratory	Communications	1	3.5K	0	.05	0
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
U.S. Army	Analysis and Testing	2	22K	7K	.3	.1
	Health and Medicine	1	5K	0	.2	0
	Instrumentation	1	105K	0	1.5	0
	Transportation	1	10K	0	.1	0
	SUBTOTAL:	5	142K	7K	2.1	.1
U.S. Army Air Mobility Research and Development Laboratory	Fire and Safety	1	10K	0	.1	0
	Communications	1	82K	41K	.7	.3
	Environment	2	344K	370K	4.5	3.5
	Fire and Safety	1	28K	0	1.5	0
	SUBTOTAL:	3	372K	370K	6	3.5
U.S. Army Medical Research and Development Command	Health and Medicine	1	24K	24K	.3	.3
	Energy	1	75K	0	.6	0
	Law Enforcement	1	0	0	.1	0
U.S. Army Mobility Equipment Command						
U.S. Capitol Police						
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FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
U.S. Coast Guard	Analysis and Testing	9	936K	324K	10.6	4.3
	Energy	1	12K	8K	.2	.2
	Environment	5	152K	205K	2.37	8.17
	Fire and Safety	2	408K	500K	2.2	2.4
	Instrumentation	3	468.5K	30K	4	.5
	Law Enforcement	2	818K	500K	6.8	3.4
	Transportation	4	1000.2K	767K	7.4	12.3
	SUBTOTAL:	26	3794.7K	2334K	33.57	31.27
U.S. Coast Guard Research and Development Center	Computer Technology	1	61.5K	50K	.15	.15
	Energy	1	.5K	0	.05	0
	Environment	1	1K	0	.1	0
	Instrumentation	2	1K	0	.1	0
	Marine Technology	1	91.5K	0	1.3	0
	SUBTOTAL:	6	247K	50K	3	.15
U.S. Congress	Health and Medicine	1	0	0	0	0
U.S. Department of Agriculture	Health and Medicine	1	18K	35K	.6	1

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FEDERAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
U.S. Forest Service	Fire and Safety	1	7K	0	.1	0
	Instrumentation	1	15K	0	.1	0
	Marine Technology	1	5K	0	.1	0
U.S. Geological Survey	SUBTOTAL:	3	27K	0	.3	0
	Analysis and Testing	1	0	0	.05	0
	Energy	1	175K	0	.6	0
	Marine Technology	2	28.5K	0	.55	0
	SUBTOTAL:	4	203.5K	0	1.2	0
U.S. Indian Service	Health and Medicine	1	0	0	0	0
	Environment	1	155K	125K	1.5	1.5
	Marine Technology	1	15K	.5K	.1	.1
U.S. Postal Service	SUBTOTAL:	2	170K	125.5K	1.6	1.6
	Computer Technology	1	527K	450K	4.8	4.5
	Law Enforcement	1	0	0	.1	0
	SUBTOTAL:	2	527K	450K	4.9	4.5
Veterans Administration Miscellaneous	Health and Medicine	1	103K	105K	1.2	1.4
	Analysis and Testing	2	300K	350K	0	0
	Fire and Safety	1	150K	175K	0	0
	Instrumentation	1	150K	175K	0	0
	SUBTOTAL:	4	600K	700K	0	0
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STATE OR LOCAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Alaska	Transportation	1	0	0	.1	0
Brattleboro, Vermont	Analysis and Testing	1	0	0	0	0
Bucks County, Pennsylvania	Instrumentation	1	0	0	.1	0
California	Health and Medicine	1	21K	10K	.6	.3
	Marine Technology	1	10K	0	.1	0
	SUBTOTAL:	2	35K	10K	.7	.3
California Air Resource Board	Environment	1	29K	0	.5	0
Connecticut Conference of Municipalities	Environment	1	0	0	0	0
Connecticut Department of Planning and Energy Policy	Energy	1	11K	0	.6	0
Kern County Air Pollution Control District	Environment	1	0	0	0	0
Louisiana State Police Force	Law Enforcement	1	0	0	0	0
New Bedford, Massachusetts, Harbor Development Commission	Environment	1	0	0	0	0
New England Innovation Group	Technological Guidance	1	15K	15K	1	1
Newport, Rhode Island	Fire and Safety	1	0	0	0	0
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STATE OR LOCAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
New York City Police Dept.	Energy	1	5K	10K	.5	.6
Old Saybrook, Connecticut	Communications	1	4K	9K	.1	.3
Oregon	Environment	1	0	0	0	0
Pennsylvania	Computer Technology	1	0	0	.05	0
	Fire and Safety	1	0	0	.05	0
	Health and Medicine	1	0	0	.05	0
	SUBTOTAL:	3	0	0	.15	0
Pennsylvania Governor's Commission on Fire Protection and Control	Health and Medicine	1	0	0	.05	0
Pennsylvania League of Cities	Energy	1	0	0	.15	0
Philadelphia Fire Department	Fire and Safety	1	0	0	.05	0
Philadelphia Mayor's Science and Technology Advisory Council	Environment	1	0	0	.1	0
Philadelphia, Pennsylvania	Computer Technology	1	0	0	.05	0
	Energy	1	0	0	.15	0
	SUBTOTAL:	2	0	0	.2	0
Rhode Island League of Cities and Towns	Technological Guidance	1	4K	0	.4	0

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STATE OR LOCAL SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
San Bernardino Desert Air Pollution Control District	Environment	1	0	0	0	0
San Bernardino Water District	Environment	1	7K	16K	.1	.2
Santa Clara Water District	Environment	1	7K	16K	.1	.2
San Diego, California (city and county)	Environment	1	0	0	0	0
	Law Enforcement	1	0	0	.04	0
	Technological Guidance	1	13.5K	14.5K	.5	.5
	Miscellaneous	2	0	0	.3	.3
	SUBTOTAL:	5	13.5K	14.5K	.84	.8
San Diego County Board of Supervisors	Environment	1	0	0	0	0
San Diego Science Advisor	Health and Medicine	1	0	0	.02	.05
San Diego Unified School District	Energy	1	0	0	0	0
South Carolina Wildlife and Marine Resource Department	Analysis and Testing	1	.5K	0	0	0
Virginia	Environment	1	0	0	.1	0
Washington	Environment	1	0	0	0	0
Waterford, Connecticut	Communications	1	1K	2K	.1	.1
Miscellaneous	Miscellaneous	1	0	0	.1	0
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

INDUSTRY OR SMALL BUSINESS SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Aerojet Ordnance Manufacturing Company	Instrumentation	1	51K	0	.1	0
	Miscellaneous	2	441.5K	511K	1.85	2.6
	SUBTOTAL:	3	492.5K	511K	1.95	2.6
Aeronutronics Ford	Analysis and Testing	1	7K	0	0	0
Aerospace Electronics, Components and Energy Group	Analysis and Testing	1	.6K	0	.005	0
Allied Chemical Corporation	Transportation	1	0	0	0	0
American Bureau of Shipping	Analysis and Testing	1	0	0	0	0
American Gas Institute	Energy	1	54K	0	1	0
Aneron Corporation	Analysis and Testing	1	0	0	0	0
A.O. Smith	Analysis and Testing	1	0	0	0	0
Arctec	Analysis and Testing	2	66K	66K	0	0
Atlantic Research Company	Miscellaneous	1	433K	466K	1.6	1.6
Avco-Lycoming	Energy	1	0	0	.08	0
Bell Aerospace	Analysis and Testing	1	25.5K	12K	.3	.1
Boeing Aerospace	Miscellaneous	1	0	0	0	0
Boeing Company	Analysis and Testing	5	40.6K	33K	.02	0
Canadian Pacific Air	Analysis and Testing	1	0	0	0	0
		3-54				



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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

INDUSTRY OR SMALL BUSINESS SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Celanese Corporation	Environment	1	2K	4K	0	0
Chaparral Industries	Analysis and Testing	1	25K	0	0	0
Cida-Geigy Corporation	Analysis and Testing	1	0	0	0	0
Crowley-Maritime Offshore Services	Transportation	1	0	0	0	0
Data General Corporation	Computer Technology	1	0	0	0	0
Eagle-Picher Company	Fire and Safety	1	5K	5K	.16	.16
Energy Research Corporation	Analysis and Testing	1	7.2K	0	.01	0
Environmental Research and Technology Corporation	Environment	1	0	0	0	0
Exxon International Company	Analysis and Testing	2	45.4K	10K	.51	.1
Ford Motor Company	Transportation	1	0	0	0	0
Gard, Incorporated	Miscellaneous	1	0	0	0	0
General Dynamics	Instrumentation	1	29K	29K	.2	.2
General Electric Company	Analysis and Testing	1	0	0	0	0
	Energy	1	.2K	0	0	0
	SUBTOTAL:	2	.2K	0	0	0
	Analysis and Testing	1	12K	24K	.1	.2
	Miscellaneous	2	441.5K	511K	1.85	2.6
	SUBTOTAL:	3	453.5K	535K	1.95	2.8
Hercules, Incorporated		3-55				

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INDUSTRY OR SMALL BUSINESS SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
High Seas Corporation	Environment	1	0	0	0	0
Holox, Incorporated	Fire and Safety	1	5K	5K	.16	.16
Houston Products and Services, Incorporated	Analysis and Testing	1	.35K	0	0	0
Hughes Aircraft Company	Analysis and Testing	1	12K	0	0	0
Hydro Products, Incorporated	Analysis and Testing	1	.45K	0	0	0
Institute of Acoustic Research	Environment	1	0	0	0	0
International Harvester, Solar Division	Analysis and Testing	1	20K	0	0	0
International Transducer Corporation	Analysis and Testing	1	.4K	0	0	0
Interstate Elex Corporation	Miscellaneous	1	0	0	0	0
ITT Gilfillan	Analysis and Testing	1	.6K	0	.005	0
	Environment	1	23.75K	30.75K	.425	.5
	SUBTOTAL:	2	24.35K	30.75K	.43	.5
Janssen R&D, Incorporated	Analysis and Testing	1	26K	30K	.6	.7
Kintec, Incorporated	Analysis and Testing	1	1.4K	0	.01	0
Lacoste Romberg	Analysis and Testing	1	0	0	0	0
Langley Corporation	Environment	1	23.75K	30.75K	.425	.5
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INDUSTRY OR SMALL BUSINESS SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Lincoln Laboratory, Incorporated	Analysis and Testing	2	56K	0	.2	0
	Analysis and Testing	2	150K	250K	2	2
	Miscellaneous	1	0	0	0	0
	SUBTOTAL:	3	150K	250K	2	2
Mark Products, Incorporated	Analysis and Testing	1	1.49K	0	0	0
	Fire and Safety	1	5K	5K	.16	.16
	Analysis and Testing	2	0	0	0	0
	Energy	1	95K	0	0	0
MB Associates	SUBTOTAL:	3	95K	0	0	0
	Computer Technology	1	2K	1K	.1	.1
	Instrumentation	1	21K	0	.4	0
	Miscellaneous	1	0	0	0	0
Ocean Technology, Incorporated	Energy	1	10K	0	.5	0
	Analysis and Testing	1	33K	33K	0	0
	Analysis and Testing	1	44K	0	.4	0
	Environment	1	23.75K	30.75K	.425	.5
Merck and Company, Incorporated	SUBTOTAL:	3	95K	0	0	0
	Computer Technology	1	2K	1K	.1	.1
	Instrumentation	1	21K	0	.4	0
	Miscellaneous	1	0	0	0	0
Motorola, Incorporated	Energy	1	10K	0	.5	0
	Analysis and Testing	1	33K	33K	0	0
	Analysis and Testing	1	44K	0	.4	0
	Environment	1	23.75K	30.75K	.425	.5
Operations Research, Incorporated	SUBTOTAL:	3	95K	0	0	0
	Computer Technology	1	2K	1K	.1	.1
	Instrumentation	1	21K	0	.4	0
	Miscellaneous	1	0	0	0	0
Philco-Ford Corporation	Energy	1	10K	0	.5	0
	Analysis and Testing	1	33K	33K	0	0
	Analysis and Testing	1	44K	0	.4	0
	Environment	1	23.75K	30.75K	.425	.5
Raytheon Corporation	SUBTOTAL:	3	95K	0	0	0
	Computer Technology	1	2K	1K	.1	.1
	Instrumentation	1	21K	0	.4	0
	Miscellaneous	1	0	0	0	0

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INDUSTRY OR SMALL BUSINESS SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Raytheon (Contd)	Marine Technology	1	10K	10K	.1	.1
	SUBTOTAL:	2	24.75K	40.75K	.525	.6
Rocket Research Corporation	Transportation	1	0	0	0	0
Rockwell Collins	Environment	1	23.75K	30.75K	.425	.5
Rockwell International, Marine Systems Division	Analysis and Testing	1	2.8K	0	.01	0
Rockwell International, Rocketdyne Division	Marine Technology	1	1.2K	0	0	0
	Miscellaneous	1	8.5K	45K	.25	1
	SUBTOTAL:	2	9.7K	45K	.25	1
Rohr Marine, Incorporated	Analysis and Testing	1	293K	229K	5	4
Sciaky Bros.	Miscellaneous	1	0	0	0	0
Science Consultants	Miscellaneous	1	0	0	0	0
SeaQuest Corporation	Environment	1	0	0	0	0
Shell Development Company	Analysis and Testing	2	1.13K	0	0	0
Singer Company	Analysis and Testing	1	25K	0	.4	0
Sundstrand Aviation	Energy	1	10K	0	0	0
Teledyne-McCormick Selph Company	Energy	3	253K	250K	5.5	5
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INDUSTRY OR SMALL BUSINESS SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Textron	Analysis and Testing	1	25.5K	12K	.3	.1
Thiokol Corporation	Transportation	1	0	0	0	0
	Miscellaneous	1	8.5K	45K	.25	1
	SUBTOTAL:	2	8.5K	45K	.25	1
TRW Systems	Energy	1	2.3K	0	0	0
Warner-Lambert	Health and Medicine	1	36K	36K	1	1
Westinghouse	Analysis and Testing	1	0	0	0	0
Xonics, Incorporated	Analysis and Testing	1	0	0	0	0
Miscellaneous	Analysis and Testing	4	320K	372K	.6	.5
	Energy	1	100K	120K	2	2
	Environment	1	0	0	0	0
	Fire and Safety	1	150K	175K	0	0
	Instrumentation	1	150K	175K	0	0
	Transportation	1	50K	50K	1	1
	Miscellaneous	1	500K	550K	10	10
	SUBTOTAL:	10	1270K	1442K	13.6	13.5

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

NON-PROFIT INSTITUTION SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Acoustical Society of America	Environment	1	0	0	0	0
American Association for Accreditation of Laboratory Animal Care	Health and Medicine	1	0	0	.05	0
American Association for Laboratory Animal Science	Health and Medicine	1	0	0	.025	0
American National Standards Institute	Environment	1	0	0	.5	.5
Asian-American Mental Health Research Center	Health and Medicine	1	0	0	0	0
Cincinnati General Hospital, Stroke Clinic	Health and Medicine	1	0	0	.1	0
Committee on Laboratory Animal Technicians	Health and Medicine	1	0	0	.025	0
Dartmouth College	Health and Medicine	1	0	0	0	0
Electric Power Research Institute	Environment	1	275K	350K	2.1	2.8
George Washington University Medical Center	Health and Medicine	1	3.06	0	.06	0
		3-60				

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

NON-PROFIT INSTITUTION SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Georgetown University Medical School	Health and Medicine	1	160K	0	2	0
Grossmont Hospital, La Mesa, California	Health and Medicine	1	0	0	0	0
Harold Brunn Institute	Health and Medicine	1	0	0	0	0
Harvard University Medical School	Health and Medicine	2	0	0	0	0
Institute for Achievement of Human Potential, Philadelphia	Health and Medicine	1	0	0	.1	0
Johns Hopkins University, Applied Physics Laboratory	Analysis and Testing Communications	2 1	312K 70K	5K 40K	4.1 1	.1 .5
	SUBTOTAL:	3	382K	45K	5.1	.6
Massachusetts General Hospital	Health and Medicine	2	0	0	0	0
Michael Reese Hospital	Health and Medicine	1	0	0	0	0
Michigan Technological Institute	Analysis and Testing	1	0	0	0	0
		3-61				

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

NON-PROFIT INSTITUTION SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MAN-YEARS	
			FY 77	FY 78	FY 77	FY 78
Mount Zion Hospital	Health and Medicine	1	0	0	0	0
Northern Virginia Community College	Health and Medicine	1	0	0	.01	0
Northwestern Medical School	Health and Medicine	1	0	0	0	0
Public Technology, Incorporated	Technological Guidance	1	11K	0	.3	0
Purdue University	Health and Medicine	1	0	0	0	0
San Diego State University	Environment	1	54K	48K	.7	.5
Scripps Institute of Oceanography	Marine Technology	1	42K	10K	1	.2
SEARCH Group, Incorporated	Law Enforcement	1	5K	0	.1	0
Stanford University	Health and Medicine	1	0	0	0	0
Thames Science Center	Environment	1	0	0	0	0
Tulane University	Marine Technology	1	1K	0	0	0
United Nations Development Program for Asia and the Pacific	Environment	1	0	0	0	0
University of California, Irvine Medical School	Health and Medicine	1	0	0	0	0
University of California, Los Angeles Medical School	Health and Medicine	1	0	0	0	0



SECTION 3  
TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

NON-PROFIT INSTITUTION SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
University of California San Diego	Marine Technology	1	11K	4K	0	0
University of California San Diego Medical School	Health and Medicine	1	0	0	0	0
University of California, San Diego Medical School University Hospital	Health and Medicine	1	0	0	0	0
University of Chicago	Health and Medicine	1	0	0	0	0
University of Connecticut	Environment	1	0	0	0	0
University of Delaware	Environment	1	0	0	0	0
University of Florida	Environment	1	0	0	0	0
University of Hawaii	Health and Medicine	1	0	0	0	0
University of Illinois	Health and Medicine	1	0	0	0	0
University of Massachusetts	Environment	1	0	0	0	0
University of Michigan, Institute of Social Research	Health and Medicine	1	0	0	0	0
University of Minnesota	Health and Medicine	1	0	0	0	0
University of North Carolina	Environment	1	0	0	0	0

## SECTION 3

TABLE 6

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND TECHNOLOGICAL AREA

NON-PROFIT INSTITUTION SPONSOR	TECHNOLOGICAL AREA	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
University of Rhode Island	Environment	1	0	0	0	0
University of Texas	Environment	1	0	0	0	0
University of Wisconsin	Health and Medicine	1	0	0	0	0
Veterans Administration Hospital, San Diego	Health and Medicine	1	0	0	0	0
Veterans Administration Hospital, Tacoma	Health and Medicine	1	0	0	0	0
Yale-New Haven Hospital	Communications	1	1K	0	0	0
Miscellaneous	Health and Medicine	1	0	0	1.5	0

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## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Brookhaven National Laboratory, Nuclear Regulatory Commission Bureau of Land Management, Dept. of the Interior Civil Aeronautics Board Defense Advanced Research Projects Agency	NUSC	1	16K	7K	.1	.1
	Naval Observatory	1	10K	10K	.2	.2
	NMRDC (NMRI)	1	0	0	.01	0
	DTNSRDC	2	1500K	4100K	1	2
	NOSC	3	799K	1072K	6	5.2
	NRL	1	10K	10K	.2	.2
	ONR	1	75K	100K	1.5	2
	ONR (Chicago)	1	175K	0	4	0
	SUBTOTAL:	8	2559K	5282K	12.7	9.4
Defense Communications Agency	Naval Observatory	1	10K	10K	.3	.3
	NOSC	2	384K	300K	3	3
	NRL	1	140K	125K	2	2
	SUBTOTAL:	4	534K	435K	5.3	5.3
Defense Intelligence Agency	NMRDC (NHRC)	1	0	0	0	0
		3-65				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Defense Investigative Service Defense Logistics Agency	NMRDC (NHRC)	1	0	0	0	0
	NAVDORSTA (Indian Head)	1	250K	300K	5	6
	ONR (Chicago)	2	375K	0	8	0
	SUBTOTAL:	3	625K	300K	13	6
	NCSL	1	39K	100K	.6	.7
Defense Mapping Agency	Naval Oceanographic Office	1	75K	90K	1.5	1.75
	SUBTOTAL:	2	114K	190K	2.1	2.45
Defense Mapping Agency, Hydrographic Center Department of Commerce	Naval Observatory	1	0	0	0	0
	NADC	1	0	0	.05	0
	Naval Biosciences Laboratory	1	40K	42K	1	1
	Naval Environmental Prediction Research Facility	1	0	0	0	0
	NUSC	1	299.5K	0	0	0
	NWC	1	418K	683K	.7	.8
	SUBTOTAL:	5	757.5K	725K	1.75	1.8
		3-66				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
DOD Tri-Service Medical Information Service	NOSC	1	50K	100K	.6	1.4
	Naval Biosciences Laboratory	1	47K	82K	1	2
	CEL	1	3.5K	0	.05	0
	NMRDC (NHRC)	1	0	0	0	0
	NADC	2	467.5K	30K	4	.5
Department of the Interior	NAEC	1	0	0	0	0
	NMRDC (NAMRL)	1	100K	200K	10	10
	NUSC	7	244K	50K	1.75	.15
	SUBTOTAL:	11	903.5K	280K	17.5	10.65
Energy Research and Development Administration	CEL	5	125K	85K	1.7	.6
	DTNSRDC	2	240K	45K	2.8	.4
	NAEC	1	0	0	0	0
	Naval Biosciences Laboratory	1	70K	200K	2	6
		3-67				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
ERDA (Contd)	Naval Oceanographic Office	1	175K	0	.6	0
	NOSC	2	113K	50K	1.5	.3
	NRL	2	310K	610K	4.5	6
	NUSC	1	50K	65K	.3	1.3
	NWC	2	228K	238K	1.4	2
	ONR	2	184K	180K	3.5	2
	USNA	1	62K	0	1.1	0
	SUBTOTAL:	20	1557K	1473K	19.4	18.6
	Naval Biosciences Laboratory	1	50K	50K	.6	.6
	NCSL	1	110K	130K	4.3	4.3
Environmental Protection Agency	NRL	4	76K	27K	1.1	.4
	NSWC	1	337K	15K	3	.25
	USNA	1	25K	0	1	0
	SUBTOTAL:	8	598K	222K	10	5.55
		3-68				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Federal Aviation Administration	CEL	1	28K	25K	.1	.4
	NOSC	1	85K	160K	.2	1.7
	NUSC	1	262.5K	40K	.65	.05
	NWC	1	20K	0	.2	0
	ONR	1	30K	60K	.5	.1
	SUBTOTAL:	5	425.5K	285K	1.65	2.25
Federal Bureau of Investigation	NAVEODFAC	2	0	0	.15	0
Federal Energy Administration	ONR	1	58K	0	1	0
Federal Highway Administration, DOT	CEL	3	102K	5K	1.5	0
	NSWC	1	140K	44K	2	.4
	SUBTOTAL:	4	242K	49K	3.5	.4
Federal Laboratory Consortium for Technology Transfer	NMRDC (NHRC)	2	0	0	.02	.02
Federal Railroad Administration, DOT	NSWC	1	268K	142K	4.3	1.5
		3-69				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Food and Drug Administration	Naval Biosciences Laboratory	1	30K	35K	1	1
George C. Marshall Flight Center, NASA	NSWC	1	166.5K	0	3	0
Goddard Space Flight Center, NASA	NSWC	1	25K	5K	.5	.1
	NUSC	1	262.5K	40K	.65	.05
	SUBTOTAL:	2	287.5K	45K	1.15	.15
Harry Diamond Laboratory, U.S. Army	NSWC	1	50K	50K	0	0
Kelly Air Force Base	NAVORDSTA (Indian Head)	1	0	0	0	0
Lawrence Berkeley Laboratory, ERDA	NWC	1	13K	0	.2	0
Lawrence Livermore Laboratory, ERDA	NWC	2	21K	0	0	0
L.B.J. Space Center, NASA	NSWC	2	147K	67K	1.8	1
Lewis Research Center, NASA	NSWC	1	3K	0	.1	0
	NUSC	1	1K	1K	.1	.1
	SUBTOTAL:	2	4K	1K	.2	.1
		3-70				



## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Maritime Administration National Aeronautics and Space Administration	DTNSRDC	3	61K	62K	.5	.8
	NADC	1	0	30K	0	.5
	NAPTC	2	51K	0	1	0
	NAVSEA	1	300K	0	5	0
	NMRDC (NAMRL)	1	168K	0	.5	0
	Naval Oceanographic Office	1	0	0	.05	0
	NOSC	3	686K	0	5.4	0
	NRL	1	4K	0	.1	0
	NSWC	1	76K	50K	1	.4
	NWC	4	92K	79K	.7	.8
National Aviation Facilities Experimental Center, Federal Aviation Administration National Bureau of Standards	ONR	2	55K	125K	.9	1.9
	SUBTOTAL:	17	1432K	284K	14.65	3.6
	NUSC	1	88.5K	0	.5	0
	Naval Observatory	1	.75K	.75K	.05	.05
		3-71				

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TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
National Cancer Institute	Naval Biosciences Laboratory	1	73K	0	4.5	2
	NRL	2	522K	550K	5.1	4.9
	SUBTOTAL:	3	595K	550K	9.6	6.9
National Data Buoy Project	Naval Oceanographic Office	1	.4K	0	0	0
National Environmental Research Center	NWC	2	223K	198K	2.6	2.9
National Highway Traffic Safety Administration	CEL	1	140K	100K	1.5	1
National Institute for Occupational Safety and Health	NRL	1	46K	0	.6	0
	Naval Biosciences Laboratory	1	25K	25K	.7	.7
	NMRDC (NMRI)	3	8.06K	0	.17	0
National Institutes of Health	SUBTOTAL:	4	33.06K	25K	.87	.7
	NMRDC (NHRC)	1	0	0	0	0
	Naval Oceanographic Office	2	.5K	0	.075	.075
		3-72				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
NMFS (Contd)	NOSC	2	31K	0	.4	0
	NUSC	1	5K	0	.1	0
	SUBTOTAL:	5	36.5K	0	.575	.075
National Oceanic and Atmospheric Administration	CEL	1	15K	15K	.1	.1
	DTNSRDC	4	71K	55K	.7	.6
	Naval Oceanographic Office	2	1.5K	2.5K	.175	.175
	NUSC	1	299.5K	0	0	0
	SUBTOTAL:	8	387K	72.5K	.975	.875
National Research Council	Naval Observatory	1	.75K	.75K	.05	.05
National Science Foundation	NMRDC (NHRC)	2	0	0	.02	.02
	NPRDC	1	13.5K	14.5K	.5	.5
	NWC	1	39K	90K	.4	.6
National Weather Service	SUBTOTAL:	4	52.5K	104.5K	.92	1.12
	Naval Oceanographic Office	1	0	0	.075	.075
		3-73				

## SECTION 3

TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Naval Facilities Engineering Command	NOSC	1	235K	228K	2	1.5
Naval Material Command	NAVFAC	1	6.5K	10K	0	0
Naval Medical Research and Development Command	NMRDC (NAMRL)	1	17K	0	.1	0
	NMRDC (NHRC)	2	120K	135K	5.5	7.5
	NMRDC (NMRI)	1	3.06K	0	.06	0
	SUBTOTAL:	4	140.06K	135K	5.66	7.5
Naval Medical Research Institute	Karolinska Institute and NMRI	1	15K	0	.25	0
Naval Oceanographic Office	Naval Oceanographic Office	1	75K	90K	1.5	1.75
Naval Regional Medical Center (San Diego)	NMRDC (NHRC)	1	0	0	.2	1.2
Naval Sea Systems Command	NAVORDSTA (Louisville)	1	0	0	0	0
	NAVSEA	1	300K	0	5	0
	SUBTOTAL:	2	300K	0	5	0
Naval Surface Weapons Center	NAPTC	1	41K	0	1	0
		3-74				

## TABLE 7

# SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
North American Air Defense Command	NOSC	1	62K	88K	.8	1
	DTNSRDC	1	27K	10K	.3	.1
	NRL	2	852K	850K	6.5	8
	NSWC	2	150K	40K	2.4	.5
	SUBTOTAL:	5	1029K	900K	9.2	8.6
Office of Hazardous Materials, DOT	NSWC	1	44K	23K	1	.5
	NPS	1	12K	0	0	0
	NRL	1	100K	0	2	0
	ONR	1	173K	270K	3	4.2
	SUBTOTAL:	3	285K	270K	5	4.2
Rome Air Development Center, USAF	NOSC	1	164K	465K	1.35	.3
Rural Development Service, USDA	NADC	1	0	0	0	0
Rural Electrification Administration, USDA	NATC	1	3K	3K	.2	.2
Small Business Administration	NADC	1	0	0	.05	0
		3-75				

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NAVAL MATERIAL COMMAND WASHINGTON DC

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TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Smithsonian Institution	Naval Oceanographic Office	1	0	0	0	0
State Department	Naval Observatory	1	.75K	.75K	.05	.05
Urban Mass Transportation Administration	NUSC	1	69K	5K	1	.1
U.S. Air Force	Naval Observatory	1	.75K	.75K	.05	.05
	NAVORDSTA (Indian Head)	1	0	0	0	0
	NCSL	1	256K	1468K	.7	5.6
	NOSC	3	192.5K	71.5K	1.8	.5
	NRL	1	79K	0	1	0
	NSWC	1	15K	0	.3	0
	SUBTOTAL	8	543.25K	1540.25K	3.85	6.15
U.S. Air Force Academy	NMRDC (NHRC)	1	0	0	0	0
U.S. Air Force Avionics Laboratory	NOSC	1	30K	0	.1	0
U.S. Air Force Civil Engineering Center	Navy Clothing and Textile Research Facility	1	85K	0	1.5	0
		3-76				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
U.S. Air Force Communications Service	NOSC	1	25K	120K	.4	1
U.S. Air Force Data Automation Agency	NOSC	1	40K	3K	.1	0
U.S. Air Force Data Service Center	NSWC	1	50K	50K	0	0
U.S. Air Force Electronics Systems Program Office	NOSC	1	200K	230K	1.6	1.6
U.S. Air Force Engineering Center	NWC	1	15K	25K	.2	.4
U.S. Air Force Weapons Laboratory	NOSC	1	3.5K	0	.05	0
U.S. Army	DTNSRDC	2	22K	7K	.3	.1
	NATC	1	13K	0	.1	0
	Naval Biosciences Laboratory	1	5K	0	.2	0
	NCSL	1	105K	0	1.5	0
	SUBTOTAL	5	142K	7K	2.1	.1
U.S. Army Air Mobility Research and Development Laboratory	NWC	1	10K	0	.1	0
		3-77				



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TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
U.S. Army Communications Systems Agency	NOSC	1	82K	41K	.7	.3
	NAVPHOTOCEN	1	28K	0	1.5	0
	NOSC	1	235K	228K	2	1.5
	NUSC	1	109K	142K	2.5	2
	SUBTOTAL:	3	372K	370K	6	3.5
U.S. Army Medical Research and Development Command	NSWC	1	24K	24K	.3	.3
	NWC	1	75K	0	.6	0
	NAVEODFAC	1	0	0	.1	0
	CEL	1	50K	0	.5	0
U.S. Army Mobility Equipment Command	DTNSRDC	9	947K	329K	10.7	4.4
	NADC	2	468.5K	30K	4	.5
	NATC	2	13K	350K	.5	14
	NCSL	1	87K	0	1.6	0
U.S. Capitol Police	Naval Oceanographic Office	2	0	0	.075	.075
		3-78				
U.S. Coast Guard						

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

FEDERAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
USCG (Contd)	NOSC	4	1758K	1112K	13.2	9.6
	NRL	1	15K	0	.2	0
	NSWC	2	51.2K	5K	.6	.1
	NWC	1	393K	500K	2	2.4
	USNA	1	12K	8K	.2	.2
	SUBTOTAL:	26	3794.7K	2334K	33.57	31.27
U.S. Coast Guard Research and Development Center	NUSC	7	155.5K	50K	1.7	.15
U.S. Congress	NMRDC (NHRC)	1	0	0	0	0
U.S. Department of Agriculture	Naval Biosciences Laboratory	1	18K	35K	.6	1
U.S. Forest Service	CEL	1	5K	0	.1	0
	NWC	2	22K	0	.2	0
	SUBTOTAL	3	27K	0	.3	0
U.S. Geological Survey	CEL	1	3.5K	0	.05	0
	Naval Oceanographic Office	2	175K	0	.65	0
	ONR	1	25K	0	.5	0
	SUBTOTAL:	4	203.5K	0	1.2	0

## TABLE 7

### SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

[illegible]

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TABLE 7

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

STATE OR LOCAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Alaska	DTNSRDC	1	0	0	.1	0
Brattleboro, Vermont	NUSC	1	0	0	0	0
Bucks County, Pennsylvania	NADC	1	0	0	.1	0
California	Naval Biosciences Laboratory	1	21K	10K	.6	.3
	CEL	1	10K	0	.1	0
	SUBTOTAL:	2	31K	10K	.7	.3
California Air Resource Board	NPS	1	29K	0	.5	0
Connecticut Conference of Municipalities	NUSC	1	0	0	0	0
Connecticut Department of Planning and Energy Policy	NUSC	1	11K	0	.6	0
Kern County Air Pollution Control District	NWC	1	0	0	0	0
Louisiana State Police Force	Naval Oceanographic Office	1	0	0	0	0
New Bedford, Massachusetts, Harbor Development Commission	Naval Oceanographic Office	1	0	0	0	0

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

STATE OR LOCAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
New England Innovation Group	NUSC	1	15K	15K	1	1
Newport, Rhode Island	NUSC	1	0	0	0	0
New York City Police Department	NUSC	1	5K	10K	.5	.6
Old Saybrook, Connecticut	NUSC	1	4K	9K	.1	.3
Oregon	DTNSRDC	1	0	0	0	0
Pennsylvania	NADC	3	0	0	.15	0
Pennsylvania Governor's Commission on Fire Protection and Control	NADC	1	0	0	.05	0
Pennsylvania League of Cities	NADC	1	0	0	.15	0
Philadelphia Fire Department	NADC	1	0	0	.05	0
Philadelphia Mayor's Science and Technology Advisory Council	NADC	1	0	0	.1	0
Philadelphia, Pennsylvania	NADC	2	0	0	.2	0
Rhode Island League of Cities and Towns	NUSC	1	4K	0	.4	0

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

STATE OR LOCAL SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
San Bernardino Desert Air Pollution Control District	NWC	1	0	0	0	0
San Bernardino Water District	NWC	1	7K	16K	.1	.2
Santa Clara Water District	NWC	1	7K	16K	.1	.2
San Diego, California (City and County)	NPRDC	3	13.5K	14.5K	.8	.8
	NMRDC (NHRC)	1	0	0	.04	0
	NOSC	1	0	0	0	0
	SUBTOTAL:	5	13.5K	14.5K	.84	.8
San Diego County Board of Supervisors	NOSC	1	0	0	0	0
San Diego Science Advisor	NMRDC (NHRC)	1	0	0	.02	.05
San Diego Unified School District	NOSC	1	0	0	0	0
South Carolina Wildlife and Marine Resource Department	Naval Oceanographic Office	1	.5K	0	0	0
Virginia	DTNSRDC	1	0	0	.1	0
Washington	DTNSRDC	1	0	0	0	0
Waterford, Connecticut	NUSC	1	1K	2K	.1	.1
Miscellaneous	NADC	1	0	0	.1	0
		3-83				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Aerojet Ordnance Manufacturing Company	NAVORDSTA (Indian Head)	2	441.5K	511K	1.85	2.6
	NWC	1	51K	0	.1	0
	SUBTOTAL:	3	492.5K	511K	1.95	2.6
Aeronutronics Ford	NWC	1	7K	0	0	0
Aerospace Electronics, Components and Energy Group	CEL	1	.6K	0	.005	0
Allied Chemical Corporation	NAVORDSTA (Indian Head)	1	0	0	0	0
American Bureau of Shipping	DTNSRDC	1	0	0	0	0
American Gas Institute	NOSC	1	54K	0	1	0
Aneron Corporation	DTNSRDC	1	0	0	0	0
A. O. Smith	DTNSRDC	1	0	0	0	0
Arctec	NSWC	2	66K	66K	0	0
Atlantic Research Company	(Indian Head)	1	433K	466K	1.6	1.6
Avco-Lycoming	USNA	1	0	0	.08	0
Bell Aerospace	DTNSRDC	1	25.5K	12K	.3	.1
Boeing Aerospace	NOSC	1	0	0	0	0
		3-84				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Boeing Company	CEL	1	7.6K	0	.02	0
	DTNSRDC	3	0	0	0	0
	NSWC	1	33K	33K	0	0
	SUBTOTAL:	5	40.6K	33K	.02	0
Canadian Pacific Air	Naval Oceanographic Office	1	0	0	0	0
Celanese Corporation	Naval Oceanographic Office	1	2K	4K	0	0
Chaparral Industries	NWC	1	25K	0	0	0
Cida-Geigy Corporation	DTNSRDC	1	0	0	0	0
Crowley-Maritime Offshore Services	CEL	1	0	0	0	0
Data General Corporation	NUSC	1	0	0	0	0
Eagle-Picher Company	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
Energy Research Corporation	CEL	1	7.2K	0	.01	0
Environmental Research and Technology Corporation	Naval Oceanographic Office	1	0	0	0	0
Exxon International Company	CEL	1	2.4K	0	.01	0



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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Exxon (Contd)	DTNSRDC	1	43K	10K	.5	.1
	SUBTOTAL:	2	45.4K	10K	.51	.1
	NAVORDSTA (Indian Head)	1	0	0	0	0
	NOSC	1	0	0	0	0
	NCSL	1	29K	29K	.2	.2
General Dynamics	DTNSRDC	1	0	0	0	0
	NAVORDSTA (Indian Head)	1	.2K	0	0	0
	SUBTOTAL:	2	.2K	0	0	0
	NAVORDSTA (Indian Head)	2	441.5K	511K	1.85	2.6
	NWC	1	12K	24K	.1	.2
Hercules, Incorporated	SUBTOTAL:	3	453.5K	535K	1.95	2.8
	Naval Oceanographic Office	1	0	0	0	0
	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
	NRL	1	.35K	0	0	0
	NWC	1	12K	0	0	0
		3-86				
High Seas Corporation	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
	NRL	1	.35K	0	0	0
	NWC	1	12K	0	0	0
	SUBTOTAL:	3	453.5K	535K	1.95	2.8
	Naval Oceanographic Office	1	0	0	0	0
Holex, Incorporated	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
	NRL	1	.35K	0	0	0
	NWC	1	12K	0	0	0
	SUBTOTAL:	3	453.5K	535K	1.95	2.8
	Naval Oceanographic Office	1	0	0	0	0
Houston Products and Services, Incorporated	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
	NRL	1	.35K	0	0	0
	NWC	1	12K	0	0	0
	SUBTOTAL:	3	453.5K	535K	1.95	2.8
	Naval Oceanographic Office	1	0	0	0	0
Hughes Aircraft Company	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
	NRL	1	.35K	0	0	0
	NWC	1	12K	0	0	0
	SUBTOTAL:	3	453.5K	535K	1.95	2.8
	Naval Oceanographic Office	1	0	0	0	0

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Hydro Products, Incorporated Institute of Acoustic Research International Harvester, Solar Division International Transducer Corporation Interstate Elex Corporation ITT Gilfillan	CEL	1	.45K	0	0	0
	Naval Oceanographic Office	1	0	0	0	0
	NWC	1	20K	0	0	0
	CEL	1	.4K	0	0	0
	NOSC	1	0	0	0	0
	CEL	1	.6K	0	.005	0
	NOSC	1	23.75K	30.75K	.425	.5
	SUBTOTAL:	2	24.35K	30.75K	.43	.5
Janssen R&D, Incorporated	Naval Biosciences Laboratory	1	26K	30K	.6	.7
Kintec, Incorporated	CEL	1	1.4K	0	.01	0
Lacoste Romberg	Naval Oceanographic Office	1	0	0	0	0
Langley Corporation	NOSC	1	23.75K	30.75K	.425	.5
Lincoln Laboratory, Incorporated	NWC	2	56K	0	.2	0
Lockheed Missile and Space	Naval Oceanographic Office	1	0	0	0	0
		3-87				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Lockheed (Contd)	NOSC	1	0	0	0	0
	NWC	1	150K	250K	2	2
	SUBTOTAL:	3	150K	250K	2	2
	NRL	1	1.49K	0	0	0
Mark Products, Incorporated MB Associates	NAVORDSTA (Indian Head)	1	5K	5K	.16	.16
	DTNSRDC	2	0	0	0	0
	NWC	1	95K	0	0	0
	SUBTOTAL:	3	95K	0	0	0
Merck and Company, Incorporated Motorola, Incorporated Ocean Technology, Incorporated Olin Corporation	NUSC	1	2K	1K	.1	.1
	NWC	1	21K	0	.4	0
	NOSC	1	0	0	0	0
	NAVORDSTA (Indian Head)	1	10K	0	.5	0
Operations Research, Incorporated Philco-Ford Corporation Raytheon Corporation Rocket Research Corporation	NSWC	1	33K	33K	0	0
	NWC	1	44K	0	.4	0
	NOSC	2	33.75K	40.75K	.525	.6
	NAVORDSTA (Indian Head)	1	0	0	0	0
		3-88				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Rockwell Collins	NOSC	1	23.75K	30.75K	.425	.5
Rockwell International, Marine Systems Divisions	CEL	1	2.8K	0	.01	0
Rockwell International, Rocketdyne Division	CEL	1	1.2K	0	0	0
	NAVORDSTA (Indian Head)	1	8.5K	45K	.25	1
	SUBTOTAL	2	9.7K	45K	.25	1
Rohr Marine, Incorporated	DTNSRDC	1	293K	229K	5	4
Sciaky Bros.	DTNSRDC	1	0	0	0	0
Science Consultants	NOSC	1	0	0	0	0
SeaQuest Corporation	Naval Oceanographic Office	1	0	0	0	0
Shell Development Company	NRL	2	1.13K	0	0	0
Singer Company	NOSC	1	25K	0	.4	0
Sundstrand Aviation	NAVORDSTA (Indian Head)	1	10K	0	0	0
Teledyne-McCormick-Selph Company	NAVORDSTA (Indian Head)	3	253K	250K	5.5	5
Textron	DTNSRDC	1	25.5K	12K	.3	.1
		3-89				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

INDUSTRY OR SMALL BUSINESS SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Thiokol Corporation	NAVORDSTA (Indian Head)	2	8.5K	45K	.25	1
TRW Systems	NAVORDSTA (Indian Head)	1	2.3K	0	0	0
Warner-Lambert	Naval Biosciences Laboratory	1	36K	36K	1	1
Westinghouse	DTNSRDC	1	0	0	0	0
Xonics, Incorporated	Naval Oceanographic Office	1	0	0	0	0
Miscellaneous	GIDEP	4	600K	700K	0	0
	NADC	1	0	0	.1	0
NAVORDSTA (Indian Head)	Naval Oceanographic Office	2	600K	670K	12	12
	NOSC	1	0	0	0	0
ONR		1	20K	22K	.5	.5
		1	50K	50K	1	1
SUBTOTAL:		10	1270K	1442K	13.6	13.5
		3-90				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

NON-PROFIT INSTITUTION SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Acoustical Society of America	NOSC	1	0	0	0	0
American Association for Accreditation of Laboratory Animal Care	NMRDC (NMRI)	1	0	0	.05	0
American Association for Laboratory Animal Science	NMRDC (NMRI)	1	0	0	.025	0
American National Standards Institute	NAVPHOTOGEN	1	0	0	.5	.5
Asian-American Mental Health Research Center	NMRDC (NHRC)	1	0	0	0	0
Cincinnati General Hospital, Stroke Clinic	NADC	1	0	0	.1	0
Committee on Laboratory Animal Technicians	NMRDC (NMRI)	1	0	0	.025	0
Dartmouth College	NMRDC (NHRC)	1	0	0	0	0
Electric Power Research Institute	NRL	1	275K	350K	2.1	2.8
Georgetown University Medical School	NMRDC (NMRI)	1	3.06K	0	.06	0
George Washington University Medical Center	NMRDC (NMRI)	1	160K	0	2	0
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

NON-PROFIT INSTITUTION SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Grossmont Hospital, La Mesa, California	NMRDC (NHRC)	1	0	0	0	0
Harold Brunn Institute	NMRDC (NHRC)	1	0	0	0	0
Harvard University Medical School	NMRDC (NHRC)	2	0	0	0	0
Institute for Achievement of Human Potential, Philadelphia	NADC	1	0	0	.1	0
Johns Hopkins University, Applied Physics Laboratory	NSWC	1	4K	5K	.1	.1
	NCSL	1	308K	0	4	0
	NRL	1	70K	40K	1	.5
	SUBTOTAL:	3	382K	45K	5.1	.6
Massachusetts General Hospital	NMRDC (NHRC)	2	0	0	0	0
Michael Reese Hospital	NMRDC (NHRC)	1	0	0	0	0
Michigan Technological Institute	NAEC	1	0	0	0	0
Mount Zion Hospital	NMRDC (NHRC)	1	0	0	0	0
Northern Virginia Community College	NMRDC (NMRI)	1	0	0	.01	0

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

NON-PROFIT INSTITUTION SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
Northwestern Medical School	NMRDC (NMRI)	1	0	0	0	0
Public Technology, Incorporated	NUSC	1	11K	0	.3	0
Purdue University	NMRDC (NHRC)	1	0	0	0	0
San Diego State University	NOSC	1	54K	48K	.7	.5
Scripps Institute of Oceanography	NOSC	1	42K	10K	1	.2
SEARCH Group, Incorporated	NUSC	1	5K	0	.1	0
Stanford University	NMRDC (NHRC)	1	0	0	0	0
Thames Science Center	NUSC	1	0	0	0	0
Tulane University	NORDA	1	1K	0	0	0
United Nations Development Program for Asia and the Pacific	Naval Oceanographic Office	1	0	0	0	0
University of California, Irvine Medical School	NMRDC (NHRC)	1	0	0	0	0
University of California, Los Angeles Medical School	NMRDC (NHRC)	1	0	0	0	0
University of California, San Diego	NOSC	1	11K	4K	0	0



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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

NON-PROFIT INSTITUTION SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
University of California, San Diego Medical School	NMRDC (NHRC)	1	0	0	0	0
University of California, San Diego Medical School University Hospital	NMRDC (NHRC)	1	0	0	0	0
University of Chicago	NMRDC (NHRC)	1	0	0	0	0
University of Connecticut	Naval Oceanographic Office	1	0	0	0	0
University of Delaware	Naval Oceanographic Office	1	0	0	0	0
University of Florida	Naval Oceanographic Office	1	0	0	0	0
University of Hawaii	NMRDC (NHRC)	1	0	0	0	0
University of Illinois	NMRDC (NHRC)	1	0	0	0	0
University of Massachusetts	Naval Oceanographic Office	1	0	0	0	0
University of Michigan, Institute of Social Research	NMRDC (NHRC)	1	0	0	0	0
University of Minnesota	NMRDC (NHRC)	1	0	0	0	0
University of North Carolina	Naval Oceanographic Office	1	0	0	0	0
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY INDIVIDUAL SPONSOR AND PERFORMING ACTIVITY

NON-PROFIT INSTITUTION SPONSOR	PERFORMING ACTIVITY	NUMBER OF PROJECTS	FUNDING		MANYEARS	
			FY 77	FY 78	FY 77	FY 78
University of Rhode Island	Naval Oceanographic Office	1	0	0	0	0
University of Texas	Naval Oceanographic Office	1	0	0	0	0
University of Wisconsin	NMRDC (NHRC)	1	0	0	0	0
Veterans Administration Hospital, San Diego	NMRDC (NHRC)	1	0	0	0	0
Veterans Administration Hospital, Tacoma	NMRDC (NHRC)	1	0	0	0	0
Yale-New Haven Hospital	NUSC	1	1K	0	0	0
Miscellaneous	NMRDC (NMRI)	1	0	0	1.5	0
		3-95				

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

ANALYSIS AND TESTING

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	8	9	23.45K	0	.07	0
David Taylor Naval Ship Research and Development Center	30	19	3149K	4836K	20.7	12.1
Government-Industry Data Exchange Program	4	NA	600K	700K	0	0
Naval Air Development Center	1	1	0	0	.1	0
Naval Air Engineering Center	3	3	0	0	0	0
Naval Air Propulsion Test Center	1	1	41K	0	1	0
Naval Biosciences Laboratory	1	1	26K	30K	.6	.7
Naval Coastal Systems Laboratory	1	1	308K	0	4	0
Naval Medical Research and Development Command	1	1	168K	0	.5	0
Naval Oceanographic Office	6	9	1.4K	0	.1	0
Naval Ocean Systems Center	2	2	45K	22K	.9	.5
Naval Research Laboratory	4	3	2.98K	0	0	0
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

ANALYSIS AND TESTING

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Naval Surface Weapons Center	7	7	341K	257K	2.1	1
Naval Underwater Systems Center	1	1	0	0	0	0
Naval Weapons Center	12	9	394K	353K	3.3	3
Office of Naval Research (Chicago)	1	3	350K	0	8	0
SUBTOTAL:	83 <sup>1</sup>	70 <sup>2</sup>	5449.8 <sup>3</sup>	6198 <sup>4</sup>	41.37 <sup>5</sup>	17.3 <sup>6</sup>
<sup>1</sup> includes 8 DOD projects <sup>2</sup> includes 9 DOD sponsors <sup>3</sup> includes 2028K, DOD; 600K GIDEP <sup>4</sup> includes 4207K, DOD; 700K GIDEP <sup>5</sup> includes 10.6, DOD <sup>6</sup> includes 2.1, DOD						
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

COMMUNICATIONS

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Naval Air Test Center	1	1	3K	3K	.2	.2
Naval Ocean Systems Center	10	8	1352K	1388K	11.6	10.6
Naval Ordnance Station (Indian Head)	1	1	250K	300K	5	6
Naval Research Laboratory	4	4	320K	175K	5.2	2.7
Naval Surface Weapons Center	1	1	76K	50K	1	.4
Naval Underwater Systems Center	5	7	708K	91K	2.5	.5
Office of Naval Research	2	2	128K	230K	2	2.3
SUBTOTAL:	24 <sup>1</sup>	24 <sup>2</sup>	2837K <sup>3</sup>	2237 <sup>4</sup>	27.5 <sup>5</sup>	22.7 <sup>6</sup>
	<sup>1</sup> includes 14 DOD projects		<sup>4</sup> includes 1993K, DOD			
	<sup>2</sup> includes 12 DOD sponsors		<sup>5</sup> includes 22.1, DOD			
	<sup>3</sup> includes 1933K, DOD		<sup>6</sup> includes 21.0, DOD			
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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

COMPUTER TECHNOLOGY

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	1	1	6K	0	.1	0
Naval Air Development Center	2	3	0	0	.1	0
Naval Ocean Systems Center	5	6	974K	804K	7.7	5.2
Naval Underwater Systems Center	3	4	125K	101K	.4	.4
Office of Naval Research	1	2	150K	200K	3	4
SUBTOTAL:	12 <sup>1</sup>	16 <sup>2</sup>	1255K <sup>3</sup>	1105K <sup>4</sup>	11.3 <sup>5</sup>	9.6 <sup>6</sup>
<div><div><div><div><div>1</div><div>includes 5 DOD projects</div></div><div><div>2</div><div>includes 7 DOD sponsors</div></div><div><div>3</div><div>includes 522K, DOD</div></div><div><div>4</div><div>includes 454K, DOD</div></div><div><div>5</div><div>includes 4.4, DOD</div></div><div><div>6</div><div>includes 2.7, DOD</div></div></div><div>3-99</div></div></div>						

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SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

ENERGY

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Naval Air Development Center	1	2	0	0	.3	0
Naval Oceanographic Office	3	4	351.5K	2.5K	1.3	.1
Naval Ocean Systems Center	2	2	54K	0	1	0
Naval Ordnance Station (Indian Head)	6	8	375.5K	370K	8	7
Naval Research Laboratory	6	4	1441K	1810K	13.2	16.8
Naval Sea Systems Command	1	2	600K	0	10	0
Naval Underwater Systems Center	6	7	68K	76K	1.6	2
Naval Weapons Center	7	6	589K	401K	4	4.4
Office of Naval Research	2	2	142K	180K	2.5	2
U.S. Naval Academy	4	4	99K	8K	2.38	2
SUBTOTAL:						
	38 <sup>1</sup>	41 <sup>2</sup>	3720K <sup>3</sup>	2847.5K <sup>4</sup>	44.28 <sup>5</sup>	32.5 <sup>6</sup>
	<sup>3</sup> includes 90K, DOD <sup>4</sup> includes 25K, DOD 3-100		<sup>5</sup> includes .8, DOD <sup>6</sup> includes .4, DOD			

## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

ENVIRONMENT

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	1	2	205K	125K	2	1.5
David Taylor Naval Ship Research and Development Center	6	6	106K	35K	1.8	.6
Naval Air Development Center	1	1	0	0	.1	0
Naval Air Test Center	1	1	0	200K	0	8
Naval Coastal Systems Laboratory	2	2	197K	130K	5.9	4.3
Naval Environmental Prediction Research Facility	1	1	0	0	0	0
Naval Oceanographic Office	5	27	2K	4K	.3	.3
Naval Ocean Systems Center	7	11	682K	627K	7.6	5.5
Naval Postgraduate School	1	1	29K	0	.5	0
Naval Research Laboratory	5	2	122K	27K	1.7	.4
Naval Surface Weapons Center	1	1	337K	15K	3	.25
Naval Underwater Systems Center	5	6	893K	142K	5.3	2
		3-101				



## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

ENVIRONMENT

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Naval Weapons Center	7	7	504K	775K	1.9	2.1
Navy Photographic Center	1	1	0	0	.5	.5
Office of Naval Research	1	1	25K	25K	.4	.4
SUBTOTAL:	45 <sup>1</sup>	60 <sup>2</sup>	3102K <sup>3</sup>	2105K <sup>4</sup>	31 <sup>5</sup>	25.85 <sup>6</sup>
	<sup>1</sup> includes 2 DOD projects <sup>2</sup> includes 4 DOD sponsors <sup>3</sup> includes 734K, DOD <sup>4</sup> includes 723K, DOD <sup>5</sup> includes 8, DOD <sup>6</sup> includes 6.5, DOD					3-102

SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

FIRE AND SAFETY

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Government-Industry Data Exchange Program	2	NA	300K	350K	0	0
Naval Air Development Center	1	2	0	0	.1	0
Naval Ordnance Station (Indian Head)	1	3	15K	15K	.5	.5
Naval Research Laboratory	2	2	94K	0	1.2	0
Naval Surface Weapons Center	3	2	194K	63K	3.4	1
Naval Underwater Systems Center	1	1	0	0	0	0
Naval Weapons Center	5	5	454K	500K	2.5	2.4
Navy Clothing and Textile Research Facility	1	1	85K	0	1.5	0
Navy Photographic Center	1	1	28K	0	1.5	0
SUBTOTAL:	16 <sup>1</sup>	17 <sup>2</sup>	1170 <sup>3</sup>	928 <sup>4</sup>	10.7 <sup>5</sup>	3.9

<sup>1</sup> includes 4 DOD projects  
<sup>2</sup> includes 4 DOD sponsors

<sup>3</sup> includes 202K, DOD; 300K, GIDEP  
<sup>4</sup> includes 350K, GIDEP

<sup>5</sup> includes 4.1, DOD

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## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

HEALTH AND MEDICINE

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	1	1	140K	100K	1.5	1
Naval Air Development Center	4	4	0	30K	.3	.5
Naval Biosciences Laboratory	11	11	415K	515K	13.2	15.6
Naval Medical Research and Development Command	24	47	426.2K	335K	20	18.75
Naval Ocean Systems Center	2	2	153K	205K	1.8	2.8
Naval Research Laboratory	2	1	522K	550K	5.1	4.9
Naval Surface Weapons Center	1	1	24K	24K	.3	.3
SUBTOTAL:	45 <sup>1</sup>	67 <sup>2</sup>	1680.2K <sup>3</sup>	1759K <sup>4</sup>	42.2 <sup>5</sup>	43.85 <sup>6</sup>
	<sup>1</sup> includes 8 DOD projects		<sup>4</sup> includes 259K, DOD			
	<sup>2</sup> includes 9 DOD sponsors		<sup>5</sup> includes 7.15, DOD			
	<sup>3</sup> includes 231K, DOD		<sup>6</sup> includes 10.4, DOD			
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## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

INSTRUMENTATION

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Government-Industry Data Exchange Program	2	NA	300K	350K	0	0
Naval Air Development Center	3	3	935K	60K	8.1	1
Naval Coastal Systems Laboratory	2	2	134K	29K	1.7	.2
Naval Oceanographic Office	1	1	0	0	0	0
Naval Surface Weapons Center	3	3	223.5K	20K	3.8	.2
Naval Underwater Systems Center	3	3	18K	7K	.3	.1
Naval Weapons Center	4	4	96K	0	.6	0
Office of Naval Research	1	1	30K	100K	.5	1.5
SUBTOTAL:						
	19 <sup>1</sup>	17 <sup>2</sup>	1736.5K <sup>3</sup>	566K <sup>4</sup>	15 <sup>5</sup>	3
	<sup>1</sup> includes 1 DOD project <sup>2</sup> includes 1 DOD sponsor <sup>3</sup> includes 105K, DOD; 300K, GIDEP <sup>4</sup> includes 350K, GIDEP <sup>5</sup> includes 1.5, DOD					
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## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

LAW ENFORCEMENT

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Naval Coastal Systems Laboratory	1	1	256K	1468K	.7	5.6
Naval Explosive Ordnance Disposal Facility	4	3	0	0	.35	0
Naval Medical Research and Development Command	1	1	0	0	.04	0
Naval Oceanographic Office	1	1	0	0	0	0
Naval Ocean Systems Center	3	2	1018K	730K	8.4	5
Naval Underwater Systems Center	1	1	5K	0	.1	0
SUBTOTAL:	11 <sup>1</sup>	9 <sup>2</sup>	1279K <sup>3</sup>	2198 <sup>4</sup>	9.59 <sup>5</sup>	10.6 <sup>6</sup>
	<sup>1</sup> includes 2 DOD projects <sup>2</sup> includes 2 DOD sponsors <sup>3</sup> includes 456K, DOD		<sup>4</sup> includes 1698K, DOD <sup>5</sup> includes 2.3, DOD <sup>6</sup> includes 7.2, DOD		3-106	

## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

MARINE TECHNOLOGY

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	10	7	178.2K	115K	2.2	.8
Naval Coastal Systems Laboratory	1	1	39K	100K	.6	.7
Naval Oceanographic Office	1	2	150K	180K	3	3.5
Naval Ocean Research and Development Activity	1	2	1K	0	0	0
Naval Ocean Systems Center	7	6	204K	74K	2.5	.6
Naval Postgraduate School	1	1	12K	0	0	0
Naval Underwater Systems Center	1	1	188K	0	2.7	0
Office of Naval Research	1	1	25K	0	.5	0
SUBTOTAL:	23 <sup>1</sup>	21 <sup>2</sup>	797.2K <sup>3</sup>	469K <sup>4</sup>	11.5 <sup>5</sup>	5.6 <sup>6</sup>
	<sup>1</sup> includes 3 DOD projects		<sup>4</sup> includes 295K, DOD			
	<sup>2</sup> includes 6 DOD sponsors		<sup>5</sup> includes 3.7, DOD			
	<sup>3</sup> includes 216K, DOD		<sup>6</sup> includes 4.3, DOD			
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## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

TECHNOLOGICAL GUIDANCE

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Naval Air Development Center	1	2	0	0	.1	0
Naval Medical Research and Development Command	2	2	0	0	.04	.04
Naval Underwater Systems Center	3	3	30K	15K	1.7	1
Naval Weapons Center	1	1	39K	90K	.4	.6
Navy Personnel Research and Development Center	1	2	27K	29K	1	1
SUBTOTAL:	8	10	96K	134K	3.24	2.64
		3-108				

## SECTION 3

TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

TRANSPORTATION

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	2	2	28K	25K	.1	.4
David Taylor Naval Ship Research and Development Center	1	1	0	0	.1	0
Naval Air Propulsion Test Center	2	1	51K	0	1	0
Naval Air Test Center	2	2	23K	150K	.6	6
Naval Ocean Systems Center	4	3	1634K	772K	11.1	7.9
Naval Ordnance Station (Indian Head)	1	4	0	0	0	0
Naval Surface Weapons Center	3	3	455.2K	191K	6.8	2
Naval Underwater Systems Center	1	1	69K	5K	1	.1
Office of Naval Research	2	2	150K	50K	3	1
SUBTOTAL:	18 <sup>1</sup>	19 <sup>2</sup>	2410.2K <sup>3</sup>	1193K	23.7 <sup>4</sup>	17.4
	<sup>1</sup> includes 1 DOD project		<sup>3</sup> includes 10K, DOD			
	<sup>2</sup> includes 1 DOD sponsor		<sup>4</sup> includes .1, DOD			
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TABLE 8

SUMMARY OF FY 1977 TECHNOLOGY TRANSFER PROJECTS, LISTED BY TECHNOLOGICAL AREA AND PERFORMING ACTIVITY

MISCELLANEOUS

PERFORMING ACTIVITY	NUMBER OF		FUNDING		MANYEARS	
	PROJECTS	SPONSORS	FY 77	FY 78	FY 77	FY 78
Civil Engineering Laboratory	2	1	96K	5K	1.4	0
David Taylor Naval Ship Research and Development Center	1	1	0	0	0	0
Naval Air Development Center	1	1	0	0	.1	0
Naval Facilities Engineering Command	1	1	6.5K	10K	0	0
Naval Observatory	4	7	23K	23K	.7	.7
Naval Ocean Systems Center	1	6	0	0	0	0
Naval Ordnance Station (Indian Head)	3	6	1834K	2130K	16	19
Naval Ordnance Station (Louisville)	1	1	0	0	0	0
Navy Personnel Research and Development Center	2	1	0	0	.3	.3
Office of Naval Research (Chicago)	1	1	200K	0	4	0
SUBTOTAL:	17 <sup>1</sup>	26 <sup>2</sup>	2159.5K <sup>3</sup>	2168K <sup>4</sup>	22.5 <sup>5</sup>	20 <sup>6</sup>

<sup>1</sup> includes 5 DOD projects<sup>2</sup> includes 5 DOD sponsors<sup>3</sup> includes 216.5K, DOD<sup>4</sup> includes 20K, DOD<sup>5</sup> includes 4.3, DOD<sup>6</sup> includes .3, DOD

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FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	To investigate and calibrate selected ultraviolet optical components for the rocket ozonesonde	Optics	Continuing calibration and documentation	22K	30K	.3	.5	NWC	NASA
Analysis & Testing	Combustion instabi- lity investigations relevant to large solid booster motors	Rocket motors	Continuing to investigate instability character- istics	46K	36K	.3	.3	NWC	NASA
Analysis & Testing	Physics of crystal- line surfaces	Crystallography	Work was delayed	0	13K	0	0	NWC	NASA
Analysis & Testing	Sensor package for MAGSAT	Airborne vector magnetometer	Navy survey instrument meets performance speci- fications at satellite altitudes.	NASA Test Facility used		.1	0	Naval Oceanographic Office	USGS/NASA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Pressure test thermistor chain	Deep ocean test and calibration facility	Completed	.4K	0	0	0	Naval Oceanographic Office	National Data Buoy Project
Analysis & Testing	Pressure test cable, connectors	Deep ocean test and calibration facility	Completed	.5K	0	0	0	Naval Oceanographic Office	National Marine Fisheries
Analysis & Testing	* Investigate de- tonation propaga- tion failure in Atlas-Centaur structural separa- tion system	Explosives (deton- ating-cord) technology	Problem analyzed and final report submitted; sponsor adopted recommendations and eliminated failures	3K	0	.1	0	NSWC	NASA (Lewis Res. Center)
Analysis & Testing	*HNS (hexanitro- stilbene) explo- sive evaluation	Explosives (deton- ating-cord) technology	The performance limits of HNS detonating cords are being studied. A procurement specification is being developed.	115K	52K	1.5	.9	NSWC	NASA (LBJ Space Center)

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FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	*Electric battery failure analysis	Electric battery technology	Final report (with conclusions and recommendations) submitted to sponsor	4K	0	.1	0	NSWC	USCG
Analysis & Testing	Programs for testing and analysis of parts, components, and materials	Data available in GIDEP	Tests and research completed			0	0	GIDEP	Government and industry organizations involved in hardware development and procurement
Analysis & Testing	Failure experience (ALERTs) information on problem parts and materials	Data available in GIDEP	Defective items identified and users notified			0	0	GIDEP	Government and industry organizations involved in hardware development and procurement
Analysis & Testing	To provide experimental verification of theoretical methods for predicting propeller induced periodic forces on nearby hull surfaces	Ship and propeller model testing	Final report on experiments is in preparation. Propeller data sent to Stevens Institute of Technology for analytical predictions.	25K	0	0	0	DTNSRDC	MARAD

\*Total GIDEP funding:  
FY 77 \$1.2 million (1/3 Navy)  
FY 78 \$1.4 million

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING...		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	To evaluate the effectiveness of protective coating used to reduce cavitation erosion of ship propellers	Ship hydrodynamics and model testing	Theoretical and experimental procedures are being developed.	20K	32K	.2	.3	DTNSRDC	MARAD
Analysis & Testing	To obtain technical data on hydrodynamic performance and provide reliability for moored buoy systems	Moored buoy systems; analytical predictions	Performance of an acoustic-type current meter has been evaluated.	15K	15K	.1	.2	DTNSRDC	NOAA
Analysis & Testing	To provide technical assistance in the areas of hydrodynamics of moored cable systems	Moored systems; hydrodynamic experiments	Computer prediction of the performance of moored current meter arrays completed. A meter platform has been calibrated in the towing basin.	21K	20K	.2	.2	DTNSRDC	NOAA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	*To experimentally simulate the wave- induced mooring line motions which degrade the per- formance of various current meters	Simulation of envi- ronmental condi- tions in the lab- oratory	Fabrication of circular, vertical, and horizontal motion mechanisms com- pleted	25K	0	.3	0	DTNSRDC	NOAA
				10K	20K	.1	.2	DTNSRDC	NOAA
Analysis & Testing	To provide technical assistance in areas of hydrodynamics of suspended cable systems to ensure successful at-sea operation of sus- pended current meter arrays	Model predictions of responses to sea imposed exci- tation	Electromagnetic type water current meter has been calibrated under steady towing conditions.	165K	45K	1.6	.4	DTNSRDC	ERDA
Analysis & Testing	*To determine the degree of effective- ness of mechanical cleaning methods for Ocean Thermal Energy Conversion heat exchanger tubes	Mechanical cleaning of seawater systems	Equipment has been designed and constructed.						

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## SECTION 4

FY 77

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	To provide technical services regarding the hydrodynamic responses of off-shore nuclear power plants to sea-imposed excitations	Model predictions of responses to sea-imposed excitation	Final evaluation has been completed. A document to aid in future evaluation of off-shore nuclear power stations has been drafted.	27K	10K	.3	.1	DTNSRDC	Nuclear Regulatory Commission
Analysis & Testing	Determine the condition of grease lubricated bearing railroad cars by analyzing grease samples	Wear particle analysis based on newly developed diagnostic techniques	Wear particle analysis performed on railroad bearings	UNFUNDED		0	0	Naval Air Engineering Center	DOT
Analysis & Testing	To develop and validate a dynamic simulation of a moored buoy in a regular and irregular seaway	Computer simulation and experimental data analysis	All experimental data has been collected, digitized, and analyzed. Programs have been converted to be used on the hybrid computer	13K	10K	.2	.2	DTNSRDC	USCG
Analysis & Testing	To procure, install, operate, and evaluate marine sanitation devices (MSD) for compliance with USCG MSD certification requirements	Test facilities and technical personnel	Two MSD have been procured and evaluated; a third is under evaluation; and a fourth selected for evaluation. 4-6	15K	5K	.2	.1	DTNSRDC	USCG



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN-YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	To investigate the seakeeping and man- euvering character- istics of both Coast guard and commercial ships	Ship model experi- ments on seakeeping and maneuvering; full scale trials	Reports on liquid natural gas cargo tank accelerations at sea, USCG cutter seakeep- ing, and offshore supply boat. Seakeeping investi- gations have been published. Roll/pitch stabilization and a recording device are under study.	110K	120K	1.2	1.2	DTNSRDC	USCG
				90K	0	1.0	0	DTNSRDC	USCG
Analysis & Testing	To experimentally evaluate liquid cargo tank over-pressuri- zation phenomena that occur during loading and unloading operations	Liquid pressuri- zation analysis and experimental modeling	Model of cargo tank/vent system and experimental evaluation of overpressure phenomena completed. Data analysis has been initiated.	645K	175K	2.0	2.5	DTNSRDC	USCG

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	To develop portable containerized, advanced, electrical power systems for use in light-house application	Energy and electrical systems and test procedures	10-KW/5-KW and 5-KV engine generators were delivered	15K	0	.2	0	DTNSRDC	USCG
Analysis & Testing	To improve the efficiency, reliability, and performance of shipboard waste processing systems by evaluating material performance in actual incinerator environments	Materials and metallurgical analysis and testing	Metallurgical evaluation and failure analyses have been completed on several incinerators. A non-corrosion testing device has been installed aboard a Coast Guard vessel.	33K	10K	.5	.2	DTNSRDC	USCG
Analysis & Testing	To provide buoy motion and driving function data to evaluate navigational buoy design concepts in the operational environment	Marine navigation; buoy stability	Buoys have been deployed. Repairs to telemetry packages and ground systems are underway. 4-8	11K	4K	.2	.1	DTNSRDC	USCG

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FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Monitor condition of engine cylinder walls following glass peening of cylinder wall	Tribology (oil analysis)	Oil sampling procedures developed	UNFUNDED		0	0	Naval Air Engineering Center	ERDA
Analysis & Testing	*A device for passive execution of head movements in a slow rotation room	Accurate quantitation of stressor effects resulting in motion sickness	Completed except for sound treatment	168K	0	.5	0	NMRDC (NAHRL)	NASA
Analysis & Testing	Furnish computer services	Computer technology and facilities	Computer services extended to several other Federal agencies (and private companies under contract to Federal agencies)	100K	100K	0	0	NSWC	Various Federal agencies and contractors, e.g., Harry Diamond Lab, Air Force Data Service Center
Analysis & Testing	*Analysis of propagation failure in DIPAM flexible linear shaped charge in F-111 aircraft module escape system	Explosives (detonating-cord) technology	Problem analyzed and final report submitted. (Recommendations to be implemented by sponsor.)	15K	0	.3	0	NSWC	USAF

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Analysis of infrared technology data and preparation of state-of-the-art reports	Infrared and electro-optical physics and technology	Ongoing year-round work	350K	0	8	0	ONR (Chicago)	Defense Logistics Agency; The DARPA; The Three Services Industry
Analysis & Testing	*To study the feasibility of using one-half inch tubular, noncellulosic ultra-filtration membranes for extending the capacity of holding tanks containing raw sewage	Sewage handling and treatment	Membranes and test materials have been procured	10K	7K	.1	.1	DTNSRDC	U.S. Army
Analysis & Testing	*To determine the cause of corrosion and failure of 5-KW Diesel generator ex-citers and recommend corrective action	Material analysis and laboratory environmental testing	Studies and experiments have been performed to duplicate the grounding in the generator field flashing circuit. A field trial is under way.	12K	0	.2	0	DTNSRDC	U.S. Army
Analysis & Testing	Characterize the strain and failure of a Kevlar epoxy polar weave flywheel that is spun to destruction	Energy storage	Test set-up is underway. Program will be completed by 31 October 1977.	41K	0	1	0	NAPTC	Naval Surface Weapons Center

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SECTION 4  
FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	*To ascertain the X-Wing demonstrator aircraft can be controlled during rotor/helo, fixed wing, or transition flight	Stability, control and aerodynamics of wings	Contract let for full scale procurement of the X-Wing aircraft model and wind tunnel testing	1,000K	4,100K	0	2.0	DTNSRDC	DARPA
Analysis & Testing	*To confirm the feasibility of required solutions for the X-Wing stopped-rotor aircraft, including stability and control, aerodynamics and aero-elastic stability	Wind tunnel scale model testing	Blade design and analysis of structural weight for 30,000 and 40,000 pound X-Wing operational aircraft completed. Wind tunnel model tests of flight demonstration completed.	500K	0	1.0	0	DTNSRDC	DARPA
Analysis & Testing	Calibrate reversing thermometers	Deep ocean test and calibration facility	Completed	.5K	0	0	0	Naval Oceanographic Office	South Carolina Wildlife and Marine Resources Department
Analysis & Testing	Analyze cause of failure of surface coating applied to cement	Material science	Samples have been analyzed and preliminary findings reported 4-11	0	0	0	0	NUSC	Town of Brattleboro, VT

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	*LCLM fuze	Missile, radar	Complete	7K	0	0	0	NWC	Aeronutronics Ford
Analysis & Testing	*To provide support for radiometric sensor tests	Aircraft, radar, sensor	Complete	12K	0	0	0	NWC	Hughes Air- craft Company
Analysis & Testing	*Chaparral Wing qualification and reproduction testing	Ranges, lab test- ing expertise and equipment	Complete	25K	0	0	0	NWC	Chaparral Industries
Analysis & Testing	*F-16 ESS high altitude starting tests	High altitude chamber	Complete	20K	0	0	0	NWC	Solar Divi- sion, Inter- national Harvester
Analysis & Testing	Sea Chaparral	Missile technology	Delayed	44K	0	.4	0	NWC	Philco-Ford Corporation

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	*Measure the performance of the hostile weapon location system	Fire control bombs system	Complete	23K	0	.2	0	NWC	Lincoln Lab., Inc.
Analysis & Testing	*Infrared measurements system	Infrared; detector	Complete	33K	0	0	0	NWC	Lincoln Lab., Inc.
Analysis & Testing	*Trident Aging Studies	Rockets, missiles, propellants	Nondestructive testing continuing	12K	24K	.1	.2	NWC	Hercules, Inc.
Analysis & Testing	*Polaris vertical test and evaluation	Rockets, missiles, propellants	Vertical static tests and evaluation continuing	150K	250K	2.0	2.0	NWC	Lockheed Missile and Space
Analysis & Testing	Laboratory support: testing of new anti-microbials in experimental coccidioidomycosis of animals	Containment facilities and mycology	Miconazole has proven to be effective in mice with coccidioidomycosis and in preliminary studies in man. 4-13	26K	30K	.6	.7	Naval Biosciences Laboratory	Janssen R&D, Inc.

SECTION 4

FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Evaluate applications of shipboard gravity meter for airborne use	Specially configured A/C with Electrostatic Suspended Gyro (ESG) Inertial Platform and precision altimeters and navigation capability	Feasibility of making airborne gravity measurements has been demonstrated.	UNFUNDED		0	0	Naval Oceanographic Office	LaCoste Romberg
Analysis & Testing	Develop design criteria/performance limitations	Model of earth's magnetic field and implementing software provided	Completed	UNFUNDED		0	0	Naval Oceanographic Office	Canadian Pacific Air; Lockheed Missile and Space Corp.; Xonics, Inc.
Analysis & Testing	Programs for testing and analysis of parts, components, and materials	Data available in GIDEP	Tests and research completed	*	*	0	0	GIDEP	Industry organizations involved in government hardware contracts
				*Total GIDEP funding: FY 77 \$1.2 million (1/3 Navy) FY 78 \$1.4 million					

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Failure experience (ALERTs) information on problem parts and materials	Data available in GIDEP	Defective items identified and users notified	*	*	0	0	GIDEP	Industry organizations involved in government hardware contracts
Analysis & Testing	*Hydrostatic pressure testing of five sets of armored cables and junction boxes	Deep ocean laboratory facility	Tests completed	1.4K	0	.01	0	CEL	Kintec, Inc.
Analysis & Testing	*Hydrostatic pressure test on one television camera	Deep ocean laboratory facility	Test completed	.45K	0	0	0	CEL	Hydro Products, Inc.
Analysis & Testing	*Electrical transient supply line tests on automatic detection and tracking equipment	Electrical test facility	Test completed	1.2K	0	.01	0	CEL	ITT Gilfillan, Aerospace Electronics - Components and Energy Group
				*Total GIDEP funding: FY 77 \$1.2 million (1/3 Navy) FY 78 \$1.4 million					
				4-15					

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	*External hydro- static pressure test on six pres- sure housings	Deep ocean labora- tory facility	Tests completed	2.8K	0	.01	0	CEL	Rockwell International - Marine Systems Division
Analysis & Testing	*Hydrostatic pres- sure test of one transducer	Deep ocean labora- tory facility	Test completed	.4K	0	0	0	CEL	International Transducer Corp.
Analysis & Testing	*To measure the wear-producing motions experienced by surface effect ship seal fingers operating at SES speeds up to 50 knots	High speed towing facilities	Work has been initiated.	51K	24K	.6	.2	DTNSRDC	Bell Aerospace; Textron
Analysis & Testing	Furnish computer services	Computer technology and facilities	Computer services extended to several other Federal agencies and private com- panies under contract to Federal agencies.	100K	100K	0	0	NSWC	Various Federal agencies and con- tractors, e.g., Arctec, ORI, Boeing, etc.

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	To determine man- euvering charac- teristics of a VLCC in shallow water	Towing basin faci- lities and instru- mentation	Instrumentation has been installed aboard the VLCC.	43K	10K	.5	.1	DTNSRDC	Exxon International Company
Analysis & Testing	To evaluate the effects of various fence and fin designs on a sur- face effect ship	Model towing tank facilities	Studies of inlet geometry effects on broaching, drag and stability have been completed.	293K	229K	5.0	4.0	DTNSRDC	Rohr Marine, Incorporated
Analysis & Testing	Evaluate acoustic decoy	ASW, torpedoes, acoustic warfare	Complete	25K	0	.4	0	NOSC	The Singer Company
Analysis & Testing	Support services to DOD contractors	T&E, calibration	Service provided as requested	20K	22K	.5	.5	NOSC	Various private companies

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	External hydrostatic pressure tests on six propulsion and three auxiliary silver zinc batteries for TRIESTE	Deep ocean laboratory facility	Tests completed	7.2K	0	.01	0	CEL	Energy Research Corp.
Analysis & Testing	Hydrostatic pressure tests on nine concrete and steel slab enclosures	Deep ocean laboratory facility	Tests completed	7.6K	0	.02	0	CEL	Boeing Company
Analysis & Testing	External hydrostatic pressure test of four cables and accelerometer assemblies	Deep ocean laboratory facility	Tests completed	2.4K	0	.01	0	CEL	Exxon Company, USA
Analysis & Testing	Provided references, reports, data, extracts to industry via PENNTAP (Pennsylvania Technical Assistance Program)	Computer information retrieval system	Continuing	UNFUNDED		.1	0	NADC	Various small businesses

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis and Testing	Low frequency cali- bration of oil company hydrophone: Shell Development Co. Model AJB hydro. FVS in freq. range 2 to 500 Hz at temp. 220 C and at hydro- static pressures to 1500 kPa	Low frequency cali- bration facility	CR No. 4331; 23 Mar 1977	.26K	0	0	0	NRL	Shell Development Company
	Low frequency cali- bration of oil company hydrophone: Shell Development Co. single element and 4 element hydros.	Low frequency cali- bration facility	Preliminary data	.85K	0	0	0	NRL	Shell Development Company

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis and Testing	Low frequency calibration of oil company hydrophone: Houston Products and Services, Inc. hydrophones Model WM1-018; Model WM2-036; and WM2-044. FFVS in freq. range 10 to 100 Hz at temp. 220 C and at hydrostatic pressures to 345 kPa	Low frequency calibration facility	CR No. 4390; 18 Jul 1977	.35K	0	0	0	NRL	Houston Products and Services, Inc.
	Low frequency calibration of oil company hydrophone: Mark Products, Inc. hydrophone Model P40 and Model HRS-1	Low frequency calibration facility	CR No. 4412; 31 Aug 1977	1.49K	0	0	0	NRL	Mark Products, Inc.

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Fatigue test fiber-reinforced plastic (FRP) foil structure	Materials and structures for marine applications	Tests are in progress	0	0	0	0	DTNSRDC	McDonnell Douglas; Boeing
Analysis & Testing	Composites	Materials for marine applications	Completed	0	0	0	0	DTNSRDC	McDonnell Douglas
Analysis & Testing	Fire protection for aluminum structures using refractive felt	Ship structure survivability	Test is in progress	0	0	0	0	DTNSRDC	American Bureau of Shipping
Analysis & Testing	Stress corrosion cracking (SCC) of HY-steels	Materials for marine applications	Analysis and testing in progress	0	0	0	0	DTNSRDC	Westinghouse; General Electric
Analysis & Testing	Glass-reinforced plastic (GRP) piping	Materials for marine applications	Shock and fire testing completed; seawater testing in progress	0	0	0	0	DTNSRDC	A. O. Smith; Aeron Corp; Cida-Geigy Corp.
Analysis & Testing	Titanium to composites bonding techniques	Materials for marine applications	Completed 4-21	0	0	0	0	DTNSRDC	Boeing

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ANALYSIS AND TESTING

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Analysis & Testing	Fatigue test titanium box beam foil simulation structure	Materials and structures for marine applications	Test is in progress	0	0	0	0	DTNSRDC	Boeing
Analysis & Testing	Magnetic compensation of satellites and calibration of on-board magnetometers	Magnetic measurement and compensation technology	Various magnetic measurements, calibrations, analyses, and compensations have been performed on satellite vehicles and their (payload) magnetometers	4K	5K	.1	.1	NSWC	Johns Hopkins University (Applied Physics Lab.)
Analysis & Testing	Test and analysis of superconducting gradiometer	Special sensor technology	Flight tests complete; final analysis in process	308K	0	4.0	0	NCSL	Johns Hopkins University (Applied Physics Lab.)
Analysis & Testing	Diesel engine oil sample analysis	Tribology (oil analysis)	Oil samples taken/wear particles analyzed	UNFUNDED		0	0	Naval Air Engineering Center	Michigan Technological Institute
TOTAL				5449.8K <sup>1</sup>	6198K <sup>2</sup>	41.37 <sup>3</sup>	17.3 <sup>4</sup>		
				<sup>1</sup> includes 1928K, DOD; 600K, GIDEP					
				<sup>2</sup> includes 4107K, DOD; 700K, GIDEP					
				<sup>3</sup> includes 10.6, DOD					
				<sup>4</sup> includes 2.1, DOD					
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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Receiver to determine satellite range (to within 10 meters)	Electronic design (communication receiver technology); microprocessor development	15 production units have been fabricated and are being installed in the field	76K	50K	1.0	.4	NSWC	NASA
Communications	Modify two Nike Hercules Radar Tracking Systems for space positioning of experimental aircraft	Range tracking techniques	Installation at Atlantic City, New Jersey, almost complete	177K	0	1.0	0	NUSC	National Aviation Facilities Experimental Center, FAA/ DOT
Communications	Improve and install five Nike Hercules Low Power Acquisition Radar Systems for tracking aircraft	Range tracking techniques	Systems have been installed and modifications are provided as needed	525K	80K	1.3	.1	NUSC	Goddard Space Flight Center, NASA, FAA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER: PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Test telephone cables and equip- ment for lightning vulnerability	"Marx" generator and high current lightning simulator	Navy lightning simulator is being used to test telephone cables, lightning arresters, and lightning suppressors for ability to withstand high voltage and current transients.	3K	3K	.2	.2	Naval Air Test Center	Rural Electri- fication Admin- istration (USDA)
	Improve reliability of communications using ionosphere by improving solar flare and iono- spheric distur- bance prediction techniques	Communications, wave propagation, astronomy, solar emissions, solar filaments	Results indicate knowledge of radio filaments should be based on larger statistical sample and that a more comprehensive filament study is needed.	17K	0	.2	0	NOSC	NASA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Develop correlations between VHF/UHF radio noise and corona emission from protective array and antenna mast as a function of lateral and vertical distribution, geometry of corona emission elements and atmospheric pressure and wind	Sensing devices for electric fields and electric field charges (lightning warning systems) and computer processing of wave forms	Data generated is presented in such a form that it is applicable for design purposes for new installations and modification of existing arrays.	30K	60K	.5	.1	ONR	FAA
Communications	Evaluation of reliability and strength of fiber optic for communications	Fiber optics, communications, reliability engineering, simulated environment testing, materials	Test lab designed for measuring strength parameters and environmental effects on fiber strength. Optical/strength experiments, static and dynamic fatigue measurements made under controlled environments.	185K	207K	2.5	2.1	NOSC	DARPA
Communications	Sensor arrays for remote viewing (TV pick-up)	Remote Imaging	Analyzed defects in silicon sensor arrays (charge coupled devices)	10K	10K	.2	.2	NRL	DARPA

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	LF/VLF Communication Coverage Analysis	LF/VLF communications coverage predictions	LF/VLF coverage predictions have been prepared as requested	140K	125K	2	2	NRL	DCA
Communications	Silver recovery	Chemical engineering for environmentally safe recovery of silver from film	Placed plant in safe, efficient operation at NOS, Indian Head, MD	250K	300K	5	6	NAVORDSTA (Indian Head)	Defense Logistics Agency
Communications	Fiber optic digital transmission link	Communications, electronics and electrical engineering, optics	Preliminary study completed	25K	120K	.4	1	NOSC	USAF Communications Service
Communications	Evaluate utility of a meteor burst communications system	Radio communications, R.F. propagation, prediction of environmental effects on propagation	VHF antenna array concepts for aircraft developed; availability of equipment determined.	379K	300K	3	3	NOSC	DCA

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Reduction of bandwidth required to transmit video and radar images	Electronics and electrical engineering, communications, electronic components, spread spectrum techniques, image processing, control of remote piloted vehicles	TV compression hardware has been tested with a spread spectrum modem.	565K	607K	3.5	3.0	NOSC	DARPA
	Demonstrate advantages of glass fiber optics over wire cables to provide operational interconnection between computers and peripheral equipment audio and video	Electro-optics, fiber optics, EM compatibility, computers, electronics	Equipment acceptance tests completed.	62K	88K	.8	1.0	NOSC	North American Air Defense Command
Communications	Provide fiber optic video channel 80 - 400 ft. distance	Optics, fiber optics, electro-optics, electronics	Bread board tested; final version of transmitter and receiver under test. 4-27	7K	0	.1	0	NOSC	USAF; Air Force Weapons Lab

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Design time and time interval modems. Provide technical support in special SATCOM applications	Communications, electronics, precise time, communications satellites	Design of new MODEM complete; first unit fab. started.	82K	41K	.7	.3	NOSC	U.S. Army Communications Systems Agency
Communications	Assess feasibility, advantage and characteristics of fiber optics for enhancing capabilities in communications systems	Communications, fiber optics	Completed; reports published on fiber optics for defense communications system.	5K	0	0	0	NOSC	DCA
Communications	Monolithic integrated bi-phase key MODEMS	Transferred Electron Logic Devices (TELDS)	Developed, demonstrated and published techniques for monolithic integrated circuits operating up to 10 GHz - ten times higher than previous technology.	98K	170K	1.5	2.2	ONR	ONR
Communications	Various industries taught how to grow high purity compound semiconductors	Extremely high purity GaAs semiconductor crystal growth	$10^8$ ohm-cm material without chromium compensation and low dislocations 4-28	100K	0	2.0	0	NRL	ONR

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Develop solar flare prediction technique based on radiometry	Astronomy, radio communications, propagation, disturbance prediction, radio astronomy	Data obtained at LaPosta analyzed did not show obvious signatures for identifying and predicting active region release of high energy protons. Results suggest use of Stanford 9.1 CM data for correlation.	25K	25K	.4	.2	NOSC	USAF
Communications	*Assist town of Waterford in communication systems	System engineering	Technical service and consultation has been provided in designing a disaster warning system and newer communications center.	1K	2K	.1	.1	NUSC	Town of Waterford, Connecticut
Communications	Planning and implementation of a telecommunication system for Eastern Connecticut	System engineering	Project has been initiated	4K	9K	.1	.3	NUSC	Town of Old Saybrook, CT
			4-29						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMMUNICATIONS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Communications	Provide communications consultant service for development of an Emergency Medical System (EMS) plan for South Central Connecticut EMS project	System engineering	The EMS communication system is now operational in South Central Connecticut. Testing and training have been completed.	1K	0	0	0	NUSC	Yale - New Haven Hospital
Communications	Implement use of scalar superconductive magnetometers on mobile platforms	Antennas, signal processing, minimize noise output	Various arrangements of magnetometers into arrays are being examined.	70K	40K	1.0	.5	NRL	Applied Physics Laboratory, Johns Hopkins University
	TOTAL			2837K <sup>1</sup>	2237K <sup>2</sup>	27.5 <sup>3</sup>	22.7 <sup>4</sup>		
				<sup>1</sup> includes 1933K, DOD <sup>2</sup> includes 1993K, DOD <sup>3</sup> includes 22.1, DOD <sup>4</sup> includes 21.0, DOD					
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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMPUTER TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Computer Technology	Develop image scan and enhancement tech- niques for automated mail handling	Passive sensors, optical detection, computer science, image storage, and retrieval	Test bed design tested and operating; improvements in process	527K	450K	4.8	4.5	NDSC	U.S. Postal Service
Computer Technology	Transfer the tech- nology developed in an automated compu- ter program for the design and analysis of buried pipe cul- verts from the research and develop- ment study to field applications	Computer-aided de- sign, utilization	Efficiency improvements in computer program CANDE and movie describing capabili- ties and application com- pleted; engineering manual, system manual, and user's manual completed. Seminars were conducted at several locations for prospective users. Project complete	6K	0	.1	0	CEL	Federal Highway Administration
Computer Technology	Assist in computer analysis of scienti- fic problems and computer modeling	Computer facilities and software; operations research	Support services have been provided on a routine basis for various projects.	123K	100K	.3	.3	NUSC	USCG R&D Center, DOT

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMPUTER TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Computer Technology	Demonstration to evaluate usefulness of access to the Federal Assistance Program Retrieval System for information on federally funded programs available to local government and agencies	Computer information retrieval system	Continuing	0	0	0	0	NADC	Dept. of Agriculture (Rural Development Service)
				328K	93K	2.7	.6		
Computer Technology	Microprogrammable controller; for interface between two info processing systems	Computers, electronics communications, distributed processing	Operational system designed; software installed. Assay of test bed system under way. Production of final system under way.					NOSC	USAF; Rome Air Development Center
Computer Technology	Provide software quality assurance support by developing configuration management plans and procedures	Computers, quality control, T&E	New project	40K	3K	.1	0	NOSC	USAF Data Automation Agency

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMPUTER TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Computer Technology	Develop new computer semiconductor chip comingling memory and logic elements for improved capability to handle advanced symbolic computer operations	Solid state physics, computers, computer sciences, information storage and retrieval	Study contract to identify, describe, and characterize a group of arithmetic and logic operations which can be implemented on a LSI chip containing memory cells.	49K	258K	0	.1	NOSC	DARPA
	Survey state-of-the-art and prepare detailed fault tolerant systems plan	Computer sciences, information theory, self-testing, redundancy in circuits	Completed; program plan available for use in fault tolerant projects.	30K	0	.1	0	NOSC	USAF Avionics Lab
Computer Technology	Hands-on simulator and trainer for electronics maintenance training	Instructional technology and computer technology	Simulators using computer-assisted instruction have been constructed for a variety of electronic communication equipment; try-out in a Naval training setting (Fleet Communications Training) is in progress.	75K	100K	1.5	2.0	ONR	DARPA
				75K	100K	1.5	2		ONR

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF COMPUTER TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Computer Technology	Provided numerous searches on computer data bases for technical reports, extracts, information	Computer information retrieval system	Continuing	UNFUNDED		.1	0	NADC	Pennsylvania Philadelphia
Computer Technology	*Provide consultant services for the installation of the NUSC PERT system.	Computer science	Programming services have been provided as necessary.	2K	1K	.1	.1	NUSC	Merck & Company, Inc.
Computer Technology	*Development of an interactive program for simulation of the execution of instructions and microinstructions	Computer science and facilities	Program has been made available to Data General Corporation and other users of the Eclipse computer.	0	0	0	0	NUSC	Data General Corporation (and other users of the Eclipse computer)
TOTAL				1255K <sup>1</sup>	1105K <sup>2</sup>	11.3 <sup>3</sup>	9.6 <sup>4</sup>		
				1. includes 522K, DOD					
				2. includes 454K, DOD					
				3. includes 4.4, DOD					
				4. includes 2.7, DOD					
4-34									

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Provide technical assistance on description of nuclear environment of reactor pressure vessel and its influence on projected radiation damage	Computer methods; neutron transport theory; neutron dosimetry	Calculations of neutron environment in specific reactors have been made; consulted on neutron dosimetry calculations and measurements	35K	75K	.5	1.0	NRL	Nuclear Regulatory Commission
Energy	Develop and test device to heat plasma in controlled fusion reactor at MIT	Radar	First version of electrical and mechanical design completed and in review process before construction begins	60K	250K	1.0	2.0	NRL	ERDA
Energy	Assure structural integrity of water reactor pressure boundary components	Advanced materials evaluation and criteria and procedures for failure prevention	Demonstration of improved resistance of steel to fracture by warm prestress application, evaluation of procedures for alleviating radiation damage, and clarification of response to cyclic fatigue stresses 4-35	817K	775K	6.0	7.0	NRL	Nuclear Regulatory Commission

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Neutron effects on structural materials; development of advanced structural materials for nuclear reactors	Materials evaluation and improvements in metallurgical technology	Improved material candidates for advanced systems and clarification of mechanical performance response to nuclear environment	250K	360K	3.5	4.0	NRL	ERDA
Energy	Jet fuel composition	Gas chromatography	Completed analysis of eight (8) experimental jet fuels	4K	0	.1	0	NRL	NASA
Energy	*Provide technical assistance in support of the remote island photovoltaic demonstration project	System engineering	Plans are being made to begin installation at NUSC's Tudor Hill Laboratory in Bermuda.	50K	65K	.3	1.3	NUSC	ERDA
Energy	*Environmental testing of photovoltaic solar cells	Test and evaluation facilities	The first array has been installed at the New London Laboratory for real time environmental testing. 4-36	1K	1K	.1	.1	NUSC	NASA (Lewis Research Center)

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Study of energy conversion systems	Conversion systems	Major heat exchanger technology deficiencies were identified.	78K	75K	.9	1.0	NWC	ERDA
Energy	Coso geothermal drilling program	Provide support, geology, geophysics	Seventeen (17) heat flow holes have been completed. Work is continuing.	150K	163K	.5	1.0	NWC	ERDA
Energy	Operation of circum-solar telescope	Atmospheric physics	The telescope gathered data at NWC and was sent to another site, as planned	13K	0	.2	0	NWC	ERDA (Lawrence Berkeley Laboratory)
Energy	Conversion of solid waste to polymer gasoline	Chemical engineering	Pyrolysis experiments continuing	163K	138K	1.6	2.0	NWC	National Environmental Research Center
Energy	OPEC: fouling prevention on installation	Marine biology, antifouling testing and prediction	Tests of materials, coatings begun.	1.5K	2.5K	.1	.1	Naval Oceanographic Office	NOAA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Resource management and exploration	Low level vector magnetic survey technology	50,000 linear miles com- pleted for broad over- view of continental US	350K (Navy funded)	0	1.2	0	Naval Oceanographic Office	USGS/ERDA
Energy	Heat Balanced Engine, EPA-farmer conversion of standard Army engine to run on farm produced alcohol	New field of heat balanced engines	Four demonstration engines converted for national exhibition	25K	0	1	0	U.S. Naval Academy	EPA
Energy	Program management and guidance for Wave Energy Conver- sion R&D programs	R&D management techniques, ocean engineering tech- nology	Provided assistance in program planning and tech- nical assessment of systems	62K	0	1.1	0	U.S. Naval Academy	ERDA
Energy	Wave Activated Turbine Generators	Computer tech- nology theoretical analysis	Theoretical equations developed; apparatus and tests designed	12K	8K	.2	.2	U.S. Naval Academy	USCG

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	To develop simple, effective means of removing scale from industrial boiler tubes to enhance heat transfer and promote fuel conservation	Knowledge of cavitation erosion damage and erosive capabilities of a cavitating water jet derived from ONR sponsored research	Early results indicate that cavitating water jet can be quite effective in descaling boiler tubes.	84K	180K (tentative)	1.5	2.0 (tentative)	ONR	ERDA (Conservation Division)
Energy	Assess impact of Presidential energy initiatives on U.S. household energy conservation behavior	Bayesian inference techniques involving subjective probability assessment based on decision theory concepts	Estimates have been furnished of the energy conservation measures, including use of solar energy, anticipated as a result of alternative policies, such as tax incentives.	58K	0	1.0	0	ONR	Federal Energy Administration
Energy	Hydrogen-oxygen fuel cells - power generation where atmospheric oxygen is not available	Powering deep sea submarines with ruggedized fuel cells modified from NASA/Apollo spacecraft	Ongoing test of fuel cell powered submersible; NASA has incorporated Navy's design changes into the fuel cells purchased for Space Shuttle application.	600K	0	10	0	NAVSEA - United Technologies, Power Systems Division	NASA, NAVSEA

## SECTION 4

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Accelerated testing of solar cells to be used on navigational aids	Environmental testing	Tests have been completed	1K	0	.1	0	NUSC	USCG R&D Center, DOT
Energy	Amine fuel production	New synthesis for fuel with safe intermediates for major improvement in environmental impact	Back-up plants under construction for amine fuels and safe recovery of byproducts	Extensive, but not re-leasable to public		0	0	NAVORDSTA (Indian Head)	USAF, Kelly AF Base, San Antonio, Texas
Energy	Photovoltaic array concept evaluation	Supplied site and technical support	Complete	75K	0	.6	0	NWC	US Army Mobility Equipment Command
Energy	Inventory of geo-thermal potential at Air Force bases	Geology	Inventory is continuing	15K	25K	.2	.4	NWC	Air Force Engineering Center
			4-40						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Energy Advisory Board for San Diego Unified School District- member	Energy, solar energy	Monthly meetings	Some internal funding by NOSC, but mostly after hours participation				NOSC	San Diego Unified School District
Energy	Demonstrated use of airborne infrared for detecting heat loss from buildings	Airborne infrared system	Initial airborne tests completed; other experi- ments being proposed	UNFUNDED		.3	0	NADC	Philadelphia; PA League of Cities
Energy	*IPA assignment to assist State of Conn. in developing solar and energy conservation programs	System engineering, computer facilities	Several major solar energy projects have been initiated by the State.	11K	0	.6	0	NUSC	State of Connecticut Department of Planning and Energy Policy

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	*IPA assignment to design and implement an automated fuel dispensing system	Management analysis	Study of present system has been completed and cost evaluation is being conducted.	5K	10K	.5	.6	NUSC	New York City Police Department
Energy	Heat balanced engine design for general aviation	New field of heat balanced engines	Design complete; fabrication by industry commenced	UNFUNDED		.08	0	U.S. Naval Academy	Avco-Lycoming
Energy	Ocean food and energy farm at sea; develop system to convert solar energy falling on ocean into synthetic gas	Energy storage, energy from ocean, ocean engineering, solar energy, kelp, materials from ocean, environment, conversion techniques, fuels	Seven acre farm <i>emplaced</i> . Proof that giant kelp will grow and reproduce; that sheep can digest dried kelp efficiently; that 95% de-watering can be accomplished. Preliminary economic analysis done; methane produced by anaerobic digestion. Ongoing studies: nutrition at CalTech, methane products at IGT. Pre-treatment at WRRRC of USDA. Program now under private sponsorship and control.	54K	0	1.0	0	NOSC	American Gas Institute

## SECTION 4

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Extrude propellant for basic AWS project contractor	Expertise in extrusion and propellant processing; unique facilities and knowledge	Provided propellant charges to meet specifications and schedule	66K	250K	2	5	NAVORDSTA (Indian Head)	Teledyne-McCormick Selph Company under Navy contract
Energy	Gas generator grains for various missile G&C	Expertise in processing ammonium nitrate-based gas generators and inhibitors	Assisted two firms to qualify as producers	20K	0	1	0	NAVORDSTA (Indian Head)	Olin Corporation; Teledyne-McCormick Selph
Energy	Harpoon missile jet engine starter gas gen. grains	Expertise in ammonium nitrate-based gas generators and processing	Supplied grains to Teledyne-McCormick for contract to McDonnell	177K	0	3	0	NAVORDSTA (Indian Head)	Teledyne-McCormick Selph
Energy	Liquid propellant for torpedoes and guns	Expertise in liquid monopropellants	Supplied Otto Fuel II to three companies and performed analytical services for one	10K 2.3K 0.2K	0 0 0	0 0 0	0 0 0	NAVORDSTA (Indian Head)	Sundstrand Aviation, TRW Systems, General Electric

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Use solar energy reflector to generate steam for a power source	Supplied site location for testing reflectors and technical support	Complete	95K	0	0	0	NWC	McDonnell Douglas Co.
Energy	Purify MAPD (propellant curative) for defense contracts	Efficient vacuum distillation techniques for thermally sensitive chemicals	Several hundred pounds of MAPD supplied to each of the following: Aerojet, Hercules, Bermitte, Rocketdyne	100K	120K	2	2	NAVORDSTA (Indian Head)	Various commercial firms under contract to Army, Navy and Air Force
Energy	*Provide consultant services for the design and installation of a solar water heater to be used as a demonstration for public education purposes	System engineering	Installation has been completed.	0	0	0	0	NUSC	Thames Science Center

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENERGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Energy	Obtain data to assess current neutron emission prediction procedures	Irradiation, fracture analysis	Selected irradiation facility; fabricated specimens; determined pre-irradiation mechanical properties of specimens	275K	350K	2.1	2.8	HL	Electric Power Research Institute
	Offshore petroleum and mineral exploration	Airborne magnetic surveys	Data provided to the Commission for the Coordination of Offshore Prospecting of the UN Development Program.	UNFUNDED		0	0	Naval Oceanographic Office	UN Development Program for Asia and the Pacific
TOTAL				3720K <sup>1</sup>	2847.5K <sup>2</sup>	44.28 <sup>3</sup>	32.5 <sup>4</sup>		
				<sup>1</sup> includes 90K, DOD					
				<sup>2</sup> includes 25K, DOD					
				<sup>3</sup> includes .8, DOD					
				<sup>4</sup> includes .4, DOD					
4-45									

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Improve predictions of volcanic activity re time and intensity of eruption	Low level surveys with high sensitivity and vector magnetometers	Completed two flights over Mt. Etna	UNFUNDED		0	0	Naval Oceanographic Office	Smithsonian Institution
Environment	Assist in planning of deepwater dump-site investigations	Ocean engineering	Applicable Navy equipment and techniques have been identified and support is being provided.	599K	0	0	0	NUSC	National Oceanic and Atmospheric Administration; DOC
Environment	Develop personal atmosphere sampler	Enclosed atmospheric sampling	Sample developed, lab tested, field evaluated	46K	0	.6	0	NRL	NIOSH
Environment	Instrument for sulfur valence measurement	X-ray spectro-chemical analysis	Instrument to be delivered to EPA in October 1977	10K	0	.1	0	NRL	EPA
Environment	Portable spectrometer	X-ray spectro-chemical analysis	Instrument to be delivered to EPA in October 1977	11K	0	.1	0	NRL	EPA

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Technique for water pollution analysis	X-ray spectro-chemical analysis	Final report due by December 1977	40K	20K	.7	.3	NRL	EPA
Environment	Asbestos detection	X-ray diffraction	Instrument in design stage	15K	7K	.2	.1	NRL	EPA
Environment	Determine feasibility of using optical methods to detect ambient levels of airborne 222 Ra or 214 Bi	Atmospheric physics, optics, masers and lasers, radar detection	Quartz resonance cells and ovens fabricated and checked out. System installed for direct determination of atomic state lifetimes	63K	0	1.2	0	NOSC	ERDA
Environment	Night fishing	Provide resource test site	Four (4) holes have been drilled.	12K	0	0	0	NWC	ERDA (Lawrence Livermore Laboratory)
Environment	NOAA Pyrotechnic/Dispenser Development Program	Meteorology; atmospheric physics	All five (5) dispensers have been fabricated and are being tested. 4-47	418K	683K	.7	.8	NWC	Department of Commerce

## SECTION 4

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Pyrotechnic generation of inorganic fumes	Meteorology; atmospheric physics	Generator design chosen and aerosol characterization started	60K	60K	1.0	.9	NMC	National Environmental Research Center
Environment	Design and fabrication of a mobile electrostatic precipitator	Mobile test vans and particulate technology	Mobile electrostatic precipitator released to EPA; operated successfully on three industrial pollution sources	337K	15K	3.0	.25	NSWC	EPA
Environment	Project to determine effects of offshore oil extraction and assess effects on marine environment of Bunker C fuel derived from shale oil	Use of Navy offshore Stage 1, logistic and technical support	New start - June 1977; support agreement FY 77 - 78 negotiated and signed	110K	130K	4.3	4.3	NCSL	EPA

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	To assist Great Lakes carriers to comply with Environmental Protection Agency standards by developing a system for enhancing existing marine sanitation devices	Sewage treatment system design; full scale testing	Final design of a DTNSRDC automatic sewage treatment system has been completed.	16K	30K	.3	.5	DTNSRDC	MARAD
Environment	To identify anti-fouling and anti-corrosion coatings and techniques to be used on non-heat exchange surfaces of the Ocean Thermal Energy Conversion Power Plants	Coatings, compatible with the environment, that prevent fouling and corrosion	Draft of final report completed	75K	0	1.2	0	DTNSRDC	ERDA
Environment	Map ocean fronts in the western North Atlantic	Satellite HRIR imagery analysis techniques	Weekly charts are provided to sixty-nine users, including 14 in this category. 4-49	No Charge		.3	.3	Naval Oceanographic Office	NOAA (NWS, NMF) USCG

## SECTION 4

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	A towed planing sled for fast surface delivery of pollution control equipment	Hydrodynamics, naval architecture, marine engineering	Project completed in June 1977; sled performed well. Modified version of sled delivered to Coast Guard with final report.	87K	0	1.6	0	NCSL	USCG, Office of R&D
Environment	To procure, install, operate, and evaluate marine sanitation devices (MSD) for compliance with USCG MSD certification requirements	Test facilities and technical personnel	Two MSD have been procured and evaluated; a third is under evaluation; and a fourth selected for evaluation.	15K	5K	.2	.1	DTNSRDC	USCG
			4-50						

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Assist in the operation of an oil-on-water test facility designed by NUSC	Marine engineering	The facility is now operational and various oil-on-water sensors are being tested and calibrated on a routine basis.	2K	0	.2	0	NUSC	USCG R&D Center, DOT
Environment	Develop an oil spill collection/removal system for open sea application based on broadcasting, harvesting and recycling polyurethane foam sorbent materials	Marine engineering; oils, lubricants, and hydraulic fluids	Completed system performance tests. Currently studying flow of oil around a ship's hull to optimize design and placement on a vessel of opportunity. Objective is a lighter and more compact system, capable of being mounted on an 82-foot cutter and larger offshore supply boats.	50K 155K	0 125K	.5 1.5	0 1.5	CEL	USCG USN
Environment	Reprinting of articles by Department of Commerce in <u>Mariners Weather Log</u> ; articles excerpted from <u>Typhoon Havens Handbook for the Western Pacific and Indian Oceans</u>	Tropical meteorology, computer expertise	Reprinting of excerpted articles continuing.	0	0	0	0	NEPRF	Department of Commerce

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FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Evaluate HH-3F in tow environment	Provide test and evaluation expertise for helicopter in tow environment. Expertise includes flying qualities, performance, and structures.	Coast Guard in process of writing work order	0	200K	0	8.0	Naval Air Test Center	USCG
Environment	The project will breadboard and test the feasibility of previously developed design of a hybrid optical digital pattern recognition system for use as a drop disdrometer. The disdrometer with its computer program and microprocessor is to give a histogram of the size distribution of a population of drop-lets with a single observation.	Laser sensing devices combined with holographic filters and computer processing	Breadboard model in final stage of fabrication; test program being formulated.	25K	25K	.4	.4	ONR	NASA

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FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING			MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 76	FY 77	FY 78	FY 77	FY 78		
Environment	Assist in the analysis and solution of problems to preserve the near shore environment	Ocean engineering	Dump sites for the TFB spoils have been studied at several locations.	142K	2.5	2			NUSC	U.S. Army Corps of Engineers
Environment	Marine Wave Protection: Experiments, tests, engineering and studies to validate tethered floating breakwater in the open ocean. Carry out development and demonstration for stimulation of acceptance of concept by industry	Marine engineering, logistics, dynamic oceanography, marine environment tethered buoys	The TFB moored in San Diego Bay transferred to San Diego Unified Port District for expansion and further evaluation with tech support still being provided by NOSC. Maritime Administration study of commercial feasibility completed. Ocean prototype now installed at Imperial Beach, CA being monitored.	470K	4.0	3			NOSC	U.S. Army Corps of Engineers and NAVFAC
Environment	To assist the Commonwealth of Virginia in passing legislation on pollution abatement of small craft	Pollution control from ships	DTNSRDC pollution experts testified at hearings in Virginia, and information is being supplied to the Commonwealth.	UNFUNDED	.1	0			DTNSRDC	Commonwealth of Virginia

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## SECTION 4

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	To assist in pollution abatement from state-owned ships and boats	Pollution control from ships	DTNSRDC pollution expert visited with State representatives.	UNFUNDED		0	0	DTNSRDC	State of Washington
Environment	To assist in pollution abatement from state-owned ships and boats	Pollution control from ships	DTNSRDC pollution expert visited with State representatives.	UNFUNDED		0	0	DTNSRDC	State of Oregon
Environment	San Bernardino snow pack augmentation	Meteorology; atmospheric physics	Instrumentation was installed and personnel were trained.	7K	16K	.1	.2	NWC	San Bernardino Water District
Environment	Santa Clara rain augmentation	Meteorology; atmospheric physics	Instrumentation was installed and personnel were trained.	7K	16K	.1	.2	NWC	Santa Clara Water District
Environment	Air quality monitoring	Meteorology; atmospheric physics	Continuous air quality monitoring	UNFUNDED		0	0	NWC	San Bernardino Desert Air Pollution Control District

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Air quality monitoring	Meteorology; atmospheric physics	Continuous air quality monitoring	UNFUNDED		0	0	NWC	Kern County Air Pollution Control District
Environment	San Diego City Noise Advisory Board - review and recommend on noise ordinances - Dr. R. W. Young, a NOSC scientist	Acoustics	Periodic meetings	Some internal funding by NOSC, but mostly after hours participation				NOSC	City of San Diego, California
Environment	County Noise Control Hearing Board - review and recommend on noise ordinances and problems; appeal hearings on ordinance violation - Mr. R. S. Gales, a NOSC scientist	Acoustics	Periodic meetings	Some internal funding by NOSC, but mostly after hours participation				NOSC	San Diego County Board of Supervisors

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Map location of ocean fronts on the western North Atlantic	Satellite HRIR imagery analysis techniques	Weekly charts for western North Atlantic provided 9 users in this category	No Charge		0	0	Naval Oceanographic Office	a) State-supported universities - Conn., Delaware, Florida, Mass., N. Carolina, Rhode Island, Texas b) New Bedford, Mass. - Harbor Development Comm.
Environment	Assist in the development of a program to optimize snow removal procedures	Operations research, computer science, computer facilities	Simulation program has been completed and data is being collected to test.	0	0	0	0	MUSC	Connecticut Conference of Municipalities
Environment	Advisory function	Sensor technologies	Continuing	UNFUNDED		.1	0	NADC	Philadelphia Mayor's Science and Technology Advisory Council

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	A study of air pollution in the Los Angeles air basin was conducted aboard the RV/Acania. Studies were conducted on power plant plumes, tanker transfer operations, drilling platforms, and parameterization of the ARB pollution model.	Shipboard 4-level meteorology station including equipment for measuring turbulence and inversion heights	A two week cruise has been successfully completed. Basic data has been forwarded to all participating agencies and calculations of parameters is underway.	29K	0	.5	0	Naval Postgraduate School	California Air Resource Board
Environment	Biofouling tests and predictions re marine paint formulations	Marine biology, simulation testing, antifouling model	Panels are immersed and assays underway	2K	4K	0	0	Naval Oceanographic Office	Celanese Corp.
Environment	Various tasks, T&E as required by government contractors and Navy activities	Electronic and electrical engineering, communications, T&E, environment	Service provided as requested 4-57	95K	123K	1.7	2.0	NOSC	Raytheon Co., ITT Gilfillan, Rockwell Collins, Langley Corp.

## SECTION 4

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## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Map position of thermal fronts in the ocean	Satellite HRIR imagery analysis	Weekly charts for western North Atlantic provided to 12 users in this category	No Charge		0	0	Naval Oceanographic Office	Nine private commercial fishermen; Environmental Research and Technology Corp.; SeaQuest Corp.; High Seas Corp.; Inst. of Acoustic Research
Environment	Assist in the development of National Standards of photography used by the private sector and government	Photography; chemical analysis; processing; pollution control; optics; mechanics; chemistry	Participated in the development of National Standards dealing with photography now used by government and industry; prepared draft standards on photographic sensitometry, optics, and methods for identification and measurement of water pollution from photo wastes	UNFUNDED		.5	.5	NAVPHOTOCEN	American National Standards Institute

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF ENVIRONMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Environment	Describe acoustic environment for yellowfin tuna to aid in reducing porpoise mortality in purse seine fishing	Acoustics, marine biology, bio-acoustics, tuna fishery, porpoises, sonar	Determined acoustic source levels of seiners; investigated spinner and spotter noise and relationship between porpoise behavior and fishing; porpoise can "see" nets acoustically.	54K	48K	.7	.5	NOSC	San Diego State University
Environment	Head National Coordinating Council on Environmental Noise. The Council has 25 representatives from regions in the United States. Its purpose is the dissemination of environmental noise information.	Acoustics	Active ongoing participation	Some internal funding by NOSC, but mostly after hours participation				NOSC	Acoustical Society of America
				2919K <sup>1</sup>	2105K <sup>2</sup>	28.43	25.85 <sup>4</sup>		
			TOTAL						
				<sup>1</sup> includes 734K, DOD					
				<sup>2</sup> includes 723K, DOD					
				<sup>3</sup> includes 8, DOD					
				<sup>4</sup> includes 6.5, DOD					
			4-59						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF FIRE AND SAFETY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Fire & Safety	Safety ALERT information	Data available in GIDEP	Safety problems identified and users notified			0	0	GIDEP	Government and industry organizations involved in hardware development and procurement
Fire & Safety	Develop standards for packaging hazardous materials	Packaging design and evaluation	Completed report and specifications on drums and pails; test requirements for carboys and bags completed	44K	23K	1.0	.5	NSWC	DOT (Office of Hazardous Materials)
Fire & Safety	Consult on nuclear reactor safety problems	Shock wave propagation; safety engineering; design review and analysis with respect to containment capability	Consultation and design reviews continuing	100K	40K	1.6	.5	NSWC	Nuclear Regulatory Commission
				*Total GIDEP funding:					
				FY 77 \$1.2 million (1/3 Navy)					
				FY 78 \$1.4 million					

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NAVAL MATERIAL COMMAND WASHINGTON DC

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NAVY TECHNOLOGY TRANSFER PROGRAM FY 77 SUMMARY STATISTICS. (U)

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF FIRE AND SAFETY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Fire & Safety	*Analyze the response characteristics of HLLW (High Level Liquid Waste) tank vaults to internal and external explosions	Shock wave propagation; safety engineering; response of structures to dynamic and explosive type loadings	Analysis in progress	50K	0	.8	0	NSWC	Nuclear Regulatory Commission
Fire & Safety	747 SCA Emergency Crew Escape System	Ordnance, aircraft	All testing completed. Final system has been installed in the 747 aircraft.	24K	0	.1	0	NWC	NASA
Fire & Safety	*To determine the safety and handling of the new industrial version of the fire line	Ordnance	Complete	7K	0	.1	0	NWC	U.S. Forest Service
Fire & Safety	Fuel studies	Fuels, aircraft	Complete	20K	0	.2	0	NWC	FAA

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF FIRE AND SAFETY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Fire & Safety	Oil tanker hazards	Flammability and ignition	Defined ignition hazards in crude oil tankers	15K	0	.2	0	NRL	USCG
Fire & Safety	Vapor Cloud Explosion Study	Explosive, safety engineering	Test on different vapors are continuing	393K	500K	2.0	2.4	NWC	USCG
Fire & Safety	Developed handwear, hood and boots to protect crash-rescue firefighters from extreme heat stress	Materials and coating technology and design engineering	Glove and hood were developed and sample gloves procured. Facepiece coating studies were completed; boots were tested and found superior to standard boot.	85K	0	1.5	0	Navy Clothing and Textile Research Facility	Air Force Civil Engineering Center
Fire & Safety	Photograph and map through heavily silted water the cement floor of locks and dam. Record cracks and corrosion with precise location.	Underwater photographic, photogrammetry, photo-optics	A photo mosaic map was made of the bottom of the dam and locks. Damage caused by corrosion was recorded by equipment designed, fabricated and operated by Navy personnel.	28K	0	1.5	0	NAVPHOTOCEN	U.S. Army Corps of Engineers
Fire & Safety	#Held icing tests	Aircraft	Complete 4-62	10K	0	.1	0	NWC	U.S. Army Air Mobility R&D Lab

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF FIRE AND SAFETY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Fire & Safety	Develop a new agent for magnesium fires	Fire suppression	Glass frits (ceramic) have been used to extinguish mg. fires.	79K	0	1.0	0	NRL	USAF
Fire & Safety	*Provide cost effective solution to water seepage in municipal buildings	Building maintenance	Recommendations have been made to the city.	0	0	0	0	NUSC	Newport, R.I.
Fire & Safety	Advise fire fighters on thermal protection developments	Thermal protection expertise	Continuing	UNFUNDED		.1	0	NADC	Pennsylvania; Philadelphia local fire companies
Fire & Safety	Safety ALERT information	Data available in GIDEP	Safety problems identified and users notified.	*	*	0	0	GIDEP	Industry organizations involved in government hardware contracts
Fire & Safety	Supply custom extruded propellants	Expertise in processing extruded propellants	Fulfilled all requests on schedule and within budget	15K	15K	.5	.5	NAVORDSTA (Indian Head)	Holex, Inc., Eagle-Picher Company, MB Associates
TOTAL 1170K <sup>1</sup> 5.3K <sup>2</sup> 10.7 <sup>3</sup> 3.9									
<sup>1</sup> includes 202K, DOD; 300K GIDEP									
<sup>2</sup> includes 350K, GIDEP									
<sup>3</sup> includes 4.1, DOD									

\*Total GIDEP funding:  
FY 77 \$1.2 million (1/3 Navy)  
FY 78 \$1.4 million

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Determine physiological effects of extended breathing of pure oxygen	Test chambers, aerospace medical expertise	Tests to be continued	0	30K	0	.5	NADC	NASA
Health & Medicine	Produce and characterize cyclotron beam for neutron cancer therapy	Cyclotron operation, neutron dosimetry, radiation technology and computer technology for dose distributions	A reliable neutron beam has been developed and is now characterized and is now being used routinely for neutron cancer therapy.	415K	450K	3.6	3.4	NRL	National Cancer Institute
Health & Medicine	Calculate flux-to-dose conversion for high energy neutrons in tissue	Computer technology, nuclear reaction models	Conversion has been calculated for hydrogen; computer codes for models have been implemented.	107K	100K	1.5	1.5	NRL	National Cancer Institute

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Environmental and zoonotic diseases: Determine those diseases which occur naturally in fur seals and their mechanisms of sur- vival in the ocean environment	Microbiology, virology, and epidemiology	Fur seals have natu- rally occurring viruses which are apparently transmissible to a variety of life forms such as fish and terre- strial mammals including primates.	40K	42K	1	1	Naval Biosciences Laboratory	Dept. of Commerce
				25K	25K	.7	.7	Naval Biosciences Laboratory	NIH
Health & Medicine	Public Health: To augment the readily detectable immunolog- ical responses to a nonliving anti- coccidioid vaccine	Mycology and contain- ment facilities	A soluble component of spherule walls influenced survival of mice infected with coccidioidomycosis and augmented dermal hypersensitivity.	4-65					

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Public Health: To prepare test re- agents for <u>Histo-</u> <u>plasma capsulatum</u> (Histoplasmin)	Mycology and contain- ment facilities	Reagents prepared were more active than pre- viously available materi- als. Repeated injection of the histoplasmin did not induce antibody formation.	30K	35K	1	1	Naval Biosciences Laboratory	FDA
Health & Medicine	Public Health: Oncogenicity of inhaled arsenic compounds	Aerosol science	Chronic exposure of mice to arsenic aerosols for 10 months has revealed no evidence of cancer.	50K	50K	.6	.6	Naval Biosciences Laboratory	EPA
Health & Medicine	*Public Health: Monitor biological burden in habitats refitted to con- serve energy	Aerobiology	Field sampling units are under construction for tests.	70K	200K	2.0	6.0	Naval Biosciences Laboratory	ERDA

4-66

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Public Health: Determine properties and hazards of virus aerosols	Aerosol science and virology and contain- ment facilities	Hazards of working with viruses are significant, but relative risks can be calculated and control measures instituted.	73K	0	4.5	2.0	Naval Biosciences Laboratory	NCI
Health & Medicine	To determine the mechanisms whereby an exotic virus of marine origin has been introduced into and spread among a domestic animal species	Virology and epide- miology	A calicivirus first iso- lated from California sea lions has twice been iso- lated from domestic swine in California.	18K	35K	.6	1	Naval Biosciences Laboratory	USDA
Health & Medicine	Develop an inte- grated mobility system for para- plegics	Human factors engineering, man- machine relations, bioengineering, prosthetics	Model of a standup ambu- lator for paraplegics as part of a wheelchair com- pleted; design to inte- grate with a wheelchair underway 4-67	103K	105K	1.2	1.4	NOSC	VA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Public Health: Determine survival of <i>E. coli</i> strains mated for low survival	Aerobiology	A wild strain has been tested as a comparative standard	47K	82K	1	2	Naval Biosciences Laboratory	HEW
Health & Medicine	Investigate the relationship between internal brain response and brain injury in humans with the aim of refining highway vehicle occupant injury criteria	Finite element method, biomechanics	Good correlation between experimentally measured pressures and computed model stresses has been achieved. A systematic procedure for recording head and neck injuries is being developed. Helmet designs and helmet liners are being evaluated.	140K	100K	1.5	1.0	CEL	National Highway Traffic Safety Administration

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Investigation of acute and chronic effects of photon and fast neutron radiation upon pulmonary and CNS function	Neurophysiology and pulmonary physiology techniques, impacting on studies of changes which might occur under hyperbaric conditions	Baseline studies of pulmonary mechanics are underway in dogs before neutron exposure. Techniques for chronic implantation of cerebral electrodes for neurophysiologic studies are being investigated.	9.2K	0	.2	0	NMRDC (NMRI)	National Institutes of Health, George Washington University Medical Center, NMRDC
	Consultation to Vietnamese refugees; assessment of health factors in immigration	Stress epidemiology; stress research techniques	Baseline consultation complete	0	0	0	0	NMRDC (NHRC)	NIMH; Asian-American Mental Health Research Center, University of California at San Diego

4-69



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	*Assessment of beneficial and nonbeneficial aspects of stress in Marine recruit training	Stress research technology; physiology, psychology and biochemical responses to human stress	Pilot studies are in the design phases; larger longitudinal studies in planning phase	Pending		0	0	NMRDC (NHRC)	U.S. Congress via U.S. Marine Corps Headquarters
Health & Medicine	Consultation to various Federal agencies on family problems related to prolonged father absence	Coping methods of families during stress	NA	0	0	0	0	NMRDC (NHRC)	U.S. Justice Dept., U.S. Indian Service, USAF Academy, DIA, DIS
Health & Medicine	To establish shipping requirements of live animals in interstate transport	Specialty trained and experienced personnel	Established guidelines for setting of priorities and for scheduling designated flights on commercial airlines	NA	NA	.01	0	NMRDC (NHRI)	Civil Aeronautics Board
			4-70						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Evaluation of research proposals for federal funding	Veterinary, medical, specialty trained personnel	Conducted site visits and participated in discussions for selection of most qualified institutions	NA	0	.01	0	NMRDC (NMRI)	National Institutes of Health
Health & Medicine	Workshop on parasitic immunology	Biomedical research relating to fundamental and applied aspects of parasitic immunology and vaccine development	A three day workshop was organized and held for 70 participants from the U.S. and other countries.	5K	0	.1	0	NMRDC (NMRI)	National Institutes of Health
Health & Medicine	Kinematic and kinetic characterization of human neck	Computer technology, biomedical instrumentation, human subject data	Data and analysis of dynamic response of human and primate head and neck to $+G_{xy}$ and $+G_{xy}$ impact acceleration submitted in final report October 1977  4-71	100K	200K	10	10	NMRDC (NAMRL)	Department of Transportation

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Vitamin C effects on immunity	Aerobiology	No difference to aerosol challenge between animals fed high C or low C diets	5K	0	.2	0	Naval Biosciences Laboratory	U.S. Army
Health & Medicine	Protein profiles as predictor of disease	Health care	Associate acute phase proteins with illness	80K	90K	3.5	5.0	Naval Health Research Center (NHRC)	Naval Medical Research and Development Command
Health & Medicine	Rapid identification of microbiological agents	Health and patient care	Adapted to rapidly identify salmonella infections	40K	45K	2.0	2.5	Naval Health Research Center (NHRC)	Naval Medical Research and Development Command
Health & Medicine	1000 Aviator Follow-up Program	Unique long term data base on 1056 aviators followed since 1940. Periodic follow-up exams have included extensive physiological and psychological measurements of the normal aging process in initially healthy young men.	All data through 1976 has been properly edited and stored on computer tapes. Publications on mortality, morbidity and frequency of many independent variables in this population contribute to the general fund of knowledge on aging.	17K	0	.1	0	Naval Aerospace Medical Research Laboratory (NAMRL)	Naval Medical Research and Development Command

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Development of a specific antitoxin for protection from lethal <u>Pseudomonas aeruginosa</u> burn infections	Microbiology technology	Specific exotoxin in <u>P. aeruginosa</u> has been isolated and purified. The biological activity of the toxin <u>in vitro</u> in tissue culture and <u>in vivo</u> in mice has been characterized; i.e., inhibits protein synthesis in both systems. The possible synergistic effect between toxin and proteases will be studied in the mouse infection model.	15K	0	.25	0	Karolinska Institute, Stockholm, Sweden and NMRI	NMRI and Karolinska Institute, Stockholm, Sweden
	Develop improved orthopedic implant devices using NITINOL	Materials science and metallurgy	A prototype hip joining prosthesis has been fabricated. Preliminary tests were highly successful.	24K	24K	.3	.3	NSWC	Army Medical R&D Command

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Telecommunications requirements and cost for computer assisted practice of cardiology (CAPOC) system	Communications, computers, clinical medicine, biomedical engineering	NOSC Technical Report 104 issued - computer assisted practice of cardiology, Phase 1 - communications study for Naval Regional Medical Center (NRMC) 16 March 1977.	50K	100K	.6	1.4	NOSC	DOD Tri-Service Medical Information System
Health & Medicine	The Brainstem Auditory Evoked Response (BAER), a newly developed non-invasive means of evaluating the functional integrity of the brainstem auditory system, are being recorded on patients referred to the Hospital Annex of NHRMC, Psychophysiology Division	Brainstem auditory	In one study BAERs are being used to rule out retrocochlear damage to the auditory system usually in the form of acoustic neuromas or other tumors located in the cerebellopontine angle. In another study, the BAER is being evaluated as an aid in the diagnosis and prognosis of comatose patients. BAER information is utilized by trauma physicians who must make decisions as to maintenance or cessation of life support. Eventually BAER information will probably be adopted as adjunct information in determining clinical brain death.	0	0	.2	1.2	NHRMC (NHRMC)	Naval Regional Medical Center, San Diego

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Provide recommenda- tions in areas of burn treatment and thermal protection	Thermal protective studies, analysis, experiments	Report completed	UNFUNDED		.1	0	NADC	Pennsylvania; Governor's Commission on Fire Protection and Control
Health & Medicine	Consultation with city and county officials on stress-related disability retirements	Stress and environ- mental medicine	Two conferences have been held to clarify issues and to determine how to attack the problem.	None	0	.02	.05	NMRDC (NHRC)	San Diego Science Advisor
Health & Medicine	Public Health: Anti- herpes agents in algae	Virology; bio- chemistry	Anti-viral agents have been found and are being tested	21K	10K	.6	.3	Naval Biosciences Laboratory	State of California, Sea Grant
			4-75						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	*Public Health: Testing of a new antifungal agent in experimental coccidioidomycosis of animals	Containment facilities and mycology	Oral administration of Ambruticin (W7783) is life sustaining and/or curative in mice infected with coccidioidomycosis	36K	36K	1	1	Naval Biosciences Laboratory	Warner-Lambert
Health & Medicine	Loaned a voice display system for use as a speech training aid for brain-injured children	Communications, visual display	Continuing tests	UNFUNDED		.1	0	NADC	Institute for Achievement of Human Potential (Philadelphia)
Health & Medicine	Loan of sensitive microphones for stroke and aneurism research	Communications technology	Continuing tests	UNFUNDED		.1	0	NADC	Stroke Clinic, Cincinnati General Hospital
Health & Medicine	Training of psychiatric residents in stress research and psychosomatic consultation	Human stress and strain technology	Two complete groups of residents have been trained in stress terminology and research. 4-76	0	0	0	0	NMRDC (NHRC)	University of California, San Diego Medical School University Hospital

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FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Medical and psycho- logical aspects of retirement from the military	Sociobiology and stress research techniques	Project is in design phase.	Pending		Pending		NMRDC (NHRC)	Institute of Social Research, University of Michigan -- ONR pending
Health & Medicine	Stress in the post- heart attack patient	Stress research techniques; consul- tation	Information has been trans- ferred facilitating medical research.	0	0	0	0	NMRDC (NHRC)	Harvard University Medical School, Mass. General Hospital
Health & Medicine	Consultation on research techniques in coronary heart disease risk factors	Stress research techniques; consul- tation	Consultation has been com- pleted on the heritability of behavioral coronary risk factors.	0	0	0	0	NMRDC (NHRC)	Harold Brunn Institute, Mount Zion Hospital
			4-77						



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Presentation of findings from the Center's research at medical schools, hospitals, and universities	Detection and rehabilitation of alcoholism; sleep and sleep deprivation; effects of noise, heat, and other environmental stresses; effects of life stress on health and adjustment; psychiatric personnel and programs; medical effects of captivity; family adjustment to prolonged father absence	N/A	0	0	0	0	NHRDC (NHRDC)	Medical Schools: Harvard, Northwestern, U. of California at Irvine, Los Angeles, and San Diego. Hospitals: Mass. General; VA San Diego; VA Tacoma; Grossmont, La Mesa, Michael Reese. Universities: Chicago, Dartmouth, Hawaii, Illinois, Minnesota, Purdue, Stanford, Wisconsin

4-78

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Education in laboratory animal and veterinary medical techniques and practices	Veterinary, medical, specialty trained personnel	Conducted lectures and tours of Navy laboratory Animal Research Facilities	NA	0	.01	0	NMRDC (NMRI)	Northern Virginia Community College
Health & Medicine	Evaluation and accreditation of programs and facilities in laboratory animal care	Veterinary, medical, specialty trained personnel	Conducted site visits of medical research institutions and attended council meetings for consideration of site visit recommendations	NA	0	.05	0	NMRDC (NMRI)	American Association for Accreditation of Laboratory Animal Care
Health & Medicine	Training and education for laboratory animal technicians	Specialty trained personnel	Attended meetings and discussion groups involved in establishing policies and requirements of training programs	NA	0	.05	0	NMRDC (NMRI)	Committee on Laboratory Animal Technicians: American Association for Laboratory Animal Science

4-79

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF HEALTH AND MEDICINE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Health & Medicine	Development of capability for typing tissues of patients who will receive organ transplants	Cryobiological techniques; tissue typing capability, computer based analytical methods	Establishment of a regional facility for storage and typing of cells; cooperative studies begun on national and international scale	160K	0	2.0	0	NMRDC (NMRI)	Georgetown Medical School
	Treatment of civilian cases of: (a) osteoradionecrosis, (b) osteomyelitis, (c) gas gangrene, (d) bone grafts, and (e) diving accidents	Hyperbaric therapy with air or oxygen	Cases have been treated as required.	UNFUNDED		1.5	0	NMRDC (NMRI)	Local medical authorities
TOTAL				1680.2K	1759K	42.23	43.85 <sup>4</sup>		
				<sup>1</sup> includes 231K, DOD					
				<sup>2</sup> includes 259K, DOD					
				<sup>3</sup> includes 7.15, DOD					
				<sup>4</sup> includes 10.4, DOD					
4-80									

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF INSTRUMENTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Instrumenta- tion	Airborne sensor system definition/ configuration; Project Aireye	Airborne sensor technology	Alternatives of appropriate sensor systems defined; configuration selected	412K	0	6.0	0	NADC	USCG, DOT
Instrumenta- tion	Modifying Navy radar for search operations	Radar technology	Evaluation of modified radar completed; recommendations made	523K	60K	2.0	1.0	NADC	USCG, DOT
Instrumenta- tion	Metrology related information	Data available in GIDEP	Research and calibration procedures completed	*	*	0	0	GIDEP	Government and industry organizations involved in hardware de- velopment and procurement
Instrumenta- tion	Avalanche control	Ordnance	Complete	15K	0	.1	0	NWC	U.S. Forest Service
Instrumenta- tion	*Provided small craft as required	Facilities instru- mentation	Services provided on a continuing basis	16K	7K	.1	.1	NUSC	Brookhaven National Lab- oratory, Nu- clear Regula- tory Commis- sion
				*Total GIDEP funding: FY 77 \$1.2 million (1/3 Navy) FY 78 \$1.4 million					

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF INSTRUMENTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Instrumenta- tion	*To provide pyro- technic materials in support of the high energy pro- pellent safety program	Rocket motors	Complete	9K	0	0	0	NWC	ERDA (Lawrence Livermore Laboratory)
Instrumenta- tion	Design and build sensors for mag- netic field mea- surements in space	Magnetometry; magnetic sensor technology	Ten low-noise sensors have been delivered for evalua- tion. Studies of the low noise properties of various materials are underway.	25K	5K	.5	.1	NSWC	NASA (Goddard Space Flight Center)
Instrumenta- tion	Develop explosively actuated separation system for Space Shuttle	Explosives engineering	Prototype hardware has been fabricated; plate severance tests are underway.	32K	15K	.3	.1	NSWC	NASA (LBJ Space Center)
Instrumenta- tion	Corrections for OMEGA system	Model of Earth's magnetic field and implementing software	Completed	UNFUNDED		0	0	Naval Oceanographic Office	USCG

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF INSTRUMENTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Instrumentation	Space Shuttle command destruct system	Explosives engineering	Report completed on design analysis of the existing system. The break-up model for the solid rocket booster, external tank, and orbiter has been completed. A report is in preparation.	166.5K	0	3.0	0	NSWC	NASA (Geo. C. Marshall Space Flight Center)
Instrumentation	Hydrophone calibrations	Facilities	Services have been provided on a routine basis	1K	0	.1	0	NUSC	USCG R&D Center, DOT
Instrumentation	Provide engineering support for the design of the coastal extension of the jetted cone anchor system	Marine engineering	Design has been completed.	1K	0	.1	0	NUSC	USCG R&D Center, DOT
Instrumentation	A short term attitude reference system is needed for the Space Shuttle.	Fiber optics	Navy funded fiber optics gyroscope technology has been identified as applicable. 4-83	30K	100K	.5	1.5	ONR	NASA

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF INSTRUMENTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Instrumentation	Provide support to Army LACV-30 tests	Test range and instrumentation technology for tracking and environmental data collection	New start - Dec 1976 Completed - June 1977	105K	0	1.5	0	NCSL	U.S. Army
Instrumentation	Advise planning commission on use of airborne sensors for imagery to assist in planning function	Airborne sensor technology	Continuing	UNFUNDED		.1	0	NADC	Bucks County, Pennsylvania
Instrumentation	Metrology related information	Data available in GIDEP	Research and calibration procedures completed	*	*	0	0	GIDEP	Industry organizations involved in government hardware contracts
Instrumentation	Tri-Fast signal conditioning	Telemetry, missiles	Complete	21K	0	.4	0	NWC	Motorola, Inc.
Instrumentation	*CADM Submunitions Program	Equipment and support	Complete	51K	0	.1	0	NWC	Aerojet Ordnance Mfg. Company
4-84				* FY 77 GIDEP funding: \$1.2 million (1/3 Navy-funded)					

## FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF INSTRUMENTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Instrumentation	Install and remove instrumentation on submarine without drydocking	Diving technology	FY 77 installation and removal complete	29K	29K	.2	.2	NCSL	General Dynamics
				TOTAL					
				1736.5K <sup>1</sup>	566K <sup>2</sup>	15 <sup>3</sup>	3		
				<sup>1</sup> includes 105K, DOD; 300K, GIDEP					
				<sup>2</sup> includes 350K, GIDEP					
				<sup>3</sup> includes 1.5, 500					
			4-85						



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF LAW ENFORCEMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Law Enforcement	Conducted classroom presentations and practical demonstra- tions at five seminars for advanced bomb technicians at the FBI Academy, Quantico, VA. The classroom effort included briefings on advanced equipment involving location, detection, handling, render safe and support techno- logy. The practical demonstration phase included the use of portable X-ray equip- ment and the inter- pretation of X-ray imagery.	Explosive ordnance disposal	Project completed	UNFUNDED		.1	0	NAVEDDFAC	FBI

4-86

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF LAW ENFORCEMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Law Enforcement	Conducted classroom presentations and practical demonstrations at a symposium for FBI Special Agents on advanced IED countermeasures equipment. Practical demonstrations involved the effective use of portable X-ray equipment.	Explosive ordnance disposal	Project completed	UNFUNDED		.05	0	NAVEODFAC	FBI
	Transferred a 40 pound (TNT) total containment vessel and related technology to U.S. Capitol Police for use in bombing incidents. The vessel will be used to transport explosive devices to a safe area for disposal.	Explosive ordnance disposal	Project completed	UNFUNDED		.1	0	NAVEODFAC	U.S. Capitol Police

4-87

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF LAW ENFORCEMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Law Enforcement	Performed tests on 3/4 inch simulated pipe bombs to demonstrate their fragmentation hazard. The pipe bombs were loaded with red dot powder and were initiated with a hot wire. Tests were conducted inside sand tubes located inside the 2-foot containment vessel.	Explosive ordnance disposal	Project completed	UNFUNDED		.1	0	NAVEODFAC	U.S. Postal Service
Law Enforcement	Develop requirements for shipboard subsystems to meet mission requirements	Systems analysis, systems integration, operations research	10 year systems plan, catalog of required task-capabilities developed	783K	500K	6.2	3.4	NOSC	USCG
			4-88						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF LAW ENFORCEMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Law Enforcement	Characterize USCG information needs by subject, message size, frequency of need, accuracy, timeliness and classification; develop link plan	Communications, computers, opera- tions research	Completed	35K	0	.6	0	NOSC	USCG
Law Enforcement	Design, build and test a buried cable intrusion detection system	Seismic detection, electronics, com- ponents, reflec- tometry	Specific signal design completed. Simulations of signal processing for various inverse filters begun.	200K	230K	1.6	1.6	NOSC	Electronics Systems Program Office, US Air Force
Law Enforcement	Project to develop defense of Air Force bases and installa- tions from water- borne intrusion by thieves and saboteurs	Inshore Undersea Warfare (IUW) Sensor Technology	New start - May 1977 Design and construction of target detection unit nearing completion.	256K	1468K	.7	5.6	NCSL	USAF
Law Enforcement	Locate submerged vehicle with victim	Magnetic and side- scan sonar survey	Completed	UNFUNDED		0	0	Naval Oceanographic Office	Louisiana State Police Force

4-89

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF LAW ENFORCEMENT

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Law Enforcement	Consultation with Personnel Dept. of San Diego to develop and validate a test battery for selection of police officers	Personnel research methods; computer programming and data processing; optical scan data processing	A battery of personality, aptitude, and attitude tests were selected; data collection, storage, and computer analysis methods were developed and turned over to the city. A full-scale validation study is underway by the city.	None	0	.04	None	NHRDC (NHRDC)	City of San Diego
Law Enforcement	*Provide support for voice privacy system	Communication system engineering	Surveys of need and availability of voice privacy equipment have been completed and recommendations made.	5K	0	.1	0	NUSC	SEARCH Group, Inc.
			TOTAL	1279K <sup>1</sup>	2198K <sup>2</sup>	9.59 <sup>3</sup>	10.6 <sup>4</sup>		
				1 includes 456K, DOD					
				2 includes 1698K, DOD					
				3 includes 2.3, DOD					
				4 includes 7.2, DOD					
			4-90						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Assemble and implant a wave follower to obtain surface mea- surements to correlate with airborne SEASAT-A equivalent measurements	Dynamic oceanography, test and services, ocean engineering	Completed	60K	0	.7	0	NOSC	NASA
Marine Technology	Determine possible radiological and biological effects of accidental marine deposition of radio- active materials	Radiation shielding, radiation protection, ocean sciences, ocean engineering	Pure clad plutonium oxide samples implanted 1975 recovered for inspection	50K	50K	.3	.3	NOSC	ERDA
Marine Technology	Growth and reproduc- tion of dolphins in eastern tropical Pacific	Marine biology; dolphins	Observations nearly com- plete and prepared for computer storage for analysis	14K	0	.2	0	NOSC	National Marine Fisheries Service
			4-91						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Support aerial surveys to determine population size of porpoises in eastern tropical Pacific affected by U.S. purse seine fishing for yellowfin tuna	Marine biology, mathematics and statistics	Complete; report prepared	17K	0	.2	0	NOSC	National Marine Fisheries Service
Marine Technology	Technical consulting services, problem definition	Corrosion engineering, biofouling control, materials for marine applications	Provision of consulting services to Battelle Northwest on a demand basis has been completed.	5K	5K	.1	.1	CEL	ERDA
Marine Technology	Design factors influencing biofouling and corrosion of OTEC system surfaces	Construction equipment, materials and supplies, organic chemistry	Final report on Design Factors Influencing Biofouling and Corrosion of OTEC System Surfaces prepared and issued	27K	0	.5	0	CEL	ERDA

4-92

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Evaluate cable logging system and design deadman anchors	Anchor engineering, engineering properties of soils	CEL developed anchor holding capacity prediction schemes used to evaluate Forest Service methods for designing deadman anchors; completion of two informal reports concluded project	5K	0	.1	0	CEL	U.S. Department of Agriculture- Forest Service
Marine Technology	To conceive and evaluate anchors capable of restraining the proposed concepts of Ocean Thermal Conversion Power Plants	Deep ocean anchoring, engineering properties of sea floor soils	Anchor systems analytically evaluated in terms of holding capacity, construction materials, installation technique, and cost for lateral capacities up to 40,000 kips. Those anchor systems best suited to QTEC needs identified - i.e., deadweight for most environments, piles for those few others. A free-fall emplacement technique has been outlined for the deadweight; model testing has verified its workability.	38K	0	.5	0	CEL	ERDA



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Produce a document on recommended standards of practice for design and construction of concrete offshore structures	Structural engineering, materials for marine applications	CEL personnel participated in a task force committee which produced a draft report entitled "Recommended Practice for the Use of Concrete for Gravity Off-shore Structures" which is now under review by the American Concrete Institute Committee on Concrete Off-shore Structures	7K	0	.1	0	CEL	Department of the Interior - U.S. Geological Survey
Marine Technology	Provide the technique and facility to measure the drag properties of cable, wire ropes, and synthetic ropes used for moored cable structures in the ocean	Marine engineering, cable dynamics, instrumentation	Selection of drag measurement techniques and test facility were completed.	15K 15K	15K 15K	.1 .1	.1 .1	CEL	NOAA USN
Marine Technology	Develop a miniature oceanographic package for use by fishermen	Oceanographic instrumentation	Support services are provided as required. 4-94	5K	0	.1	0	NUSC	National Marine Fisheries Service

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Determine experimentally the material and engineering properties of partly and fully saturated concrete for use in Ocean Thermal Energy Conversion projects	Materials for marine applications	One part of a three-part program was initiated and reported to sponsor informally. Effort was terminated by sponsor in favor of higher priority efforts.	35K	0	.5	0	CEL	ERDA
Marine Technology	Develop an anti-fouling marine concrete for lining the seawater intake ducts and the floating platform for an OTEC plant	Materials for marine applications, chemical engineering, corrosion engineering	No appreciable progress made in FY 77 after receipt of funds late in August 1977	20K	80K	.1	.5	CEL	ERDA
Marine Technology	Conduct field measurement study of turbulence and orbital motion velocities	Ocean engineering	Experiments are being conducted in conjunction with the University of Rhode Island	183K	0	2.6	0	NUSC	USCG R&D Center, DOT

4-95

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Experimental investigation to explore both the fundamental nature of wave refraction by surface currents and the applicability of a grid-generated wake to provide local wave attenuation in the open sea	Knowledge of wave energy dissipation and interaction between gravity waves and finite turbulent flow fields derived from ONR Code 438 sponsored research	Program has just been started	25K	0	.5	0	ONR	U.S. Geological Survey
Marine Technology	Determination of melting relationships on ice being towed in sea water	Naval engineering; oceanography	Initial experiments conducted	12K	0	0	0	NPS	ONR
Marine Technology	Assist development of mapping and charting capability in Caribbean and Latin American countries	Coastal hydrographic survey technology	Eleven countries now under the Harbor Survey Assistance Program (HARSAP) umbrella. Surveys conducted in Panama, Haiti, Dominican Republic, Bahamas; Peru added to program	150K	180K	3.0	3.5	NAVOCEANO	DMA/NAVOCEANO

4-96

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Project to refine methods of mapping shoals, reefs, and shallow water depths using multispectral scanner	Remote sensing technology and associated analytical methods	Analysis of 1976 fly-over data complete ~ 1977 fly-over data collected.	39K	100K	.6	.7	NCSL	Defense Mapping Agency
Marine Technology	Provide consulting services for the Tethered Float Breakwater Ocean Experiment	Ocean engineering, materials for marine applications, anchoring	Analysis and design of a site specific shallow water mooring system	10K	0	.1	0	CEL	State of California
Marine Technology	*Seawater immersion testing of 11 racks of specimens and two individual specimens	Marine exposure facility	Long-term explosive test underway	1.2K	0	0	0	CEL	Rockwell International - Rocketdyne Division
Marine Technology	Determine source of damage to sonar boat	Environmental biology, biology, sharks	Damage believed to be from a small species of shark	10K	10K	.1	.1	NOSC	Raytheon Company
Marine Technology	Provide support to Marine Physical Laboratory	Administration and management	Continuing support as requested 4-97	11K	4K	0	0	NOSC	University of California, San Diego

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MARINE TECHNOLOGY

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Marine Technology	Provide Chief Scientist to the Deep Sea Drilling Project	Dynamic oceanography, physical oceanography, deep ocean technology	Ongoing service provided	42K	10K	1.0	.2	WOSC	Scripps Institute of Oceanography
Marine Technology	Acoustic-optic research task	Analysis of seismograms, Lofar grams, and sonograms	Performing laboratory research utilizing Shell Oil Company acoustic-optical analyzer	1K	0	0	0	NORDA	Tulane University and NORDA
TOTAL				797.2K <sup>1</sup>	469K <sup>2</sup>	11.5 <sup>3</sup>	5.6 <sup>4</sup>		
				<sup>1</sup> includes 216K, DOD					
				<sup>2</sup> includes 295K, DOD					
				<sup>3</sup> includes 3.7, DOD					
				<sup>4</sup> includes 4.3, DOD					
				4-98					

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TECHNOLOGICAL GUIDANCE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Technological Guidance	Operation of the Federal Laboratory Consortium for Technology Transfer	Administration management	Continuing coordination of the Consortium	39K	90K	.4	.6	NWC	NSF
Technological Guidance	Technology Transfer Conference and Workshop (8-11 Nov 76) for small business, industry, and local governments	Described programs and answered questions in areas of stress, medicine, environmental factors in occupational stress, alcoholism, and sleep deprivation	Responding to inquiries as they come in	0	0	.02	.04	NHRDC (NHRDC)	NSF; Federal Laboratory Consortium for Technology Transfer
Technological Guidance	Technology Transfer Conference and Workshop (18-19 May 1977), Portland, Oregon, for local governments and private industry	Described programs and answered questions in areas of stress medicine, environmental factors in occupational stress, alcoholism, and sleep deprivation	Responding to inquiries as they come in	0	0	.02	0	NHRDC (NHRDC)	NSF; Federal Laboratory Consortium for Technology Transfer

4-99

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TECHNOLOGICAL GUIDANCE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Technological Guidance	A Science Advisor for the city and county of San Diego Technology Action Center (SANDTAC) was needed to carry on the local government technology program.	An Intergovernmental Personnel Agreement was used to detail a scientist from NPRDC to serve as Science Advisor.	The San Diego Technology Action Center (SANDTAC) is very effectively carrying out a strong and expanding technology transfer program directly responsive to city and county operational problems.	27K	29K	1.0	1.0	Navy Personnel Research and Development Center	NSF, City of San Diego, County of San Diego
	Participated in Business Opportunity Conferences providing patent and other technical information and reports to companies	Patents; technical reports; technology transfer information	Continuing	UNFUNDED		.1	0	NADC	Dept. of Commerce; Small Business Administration
			4-100						

SECTION 4  
FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TECHNOLOGICAL GUIDANCE

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Technological Guidance	IPA assignment to link resource agencies to needs of Connecticut municipalities	System engineering, operations research, management analysis, information systems, testing & evaluation, procurement procedures	Technology transfer linkages are being developed and 100 requests for assistance from local governments have been handled.	15K	15K	1.0	1.0	NUSC	New England Innovation Group
	IPA assignment to assist in the development of a public works management program	Operations research, management systems, systems engineering	Program in the planning stage	4K	0	.4	0	NUSC	Rhode Island League of Cities & Towns
Technological Guidance	Serve as a technical backup site for 27 medium size cities of the Urban Technology System	System engineering, operations research, management analysis, information systems, testing and evaluation, procurement procedures	Technology transfer linkages are firmly developed as the project moves into its third year. Projects have been completed for ten different cities.	11K	0	.3	0	NUSC	Public Technology, Inc.
			TOTAL 4-101	96K	134K	3.24	2.64		



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TRANSPORTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Transportation	Determine benefits of shrinkage compensating cement in airport pavements in terms of increased strength, durability, and reduced number of joints	Concrete, instrumentation	Experimental testing of 65 test prisms to determine expansion-reinforcement-shrinkage relationships was completed.	28K	25K	.1	.4	CEL	FAA
				268K	142K	4.3	1.5	NSWC	DOT (Federal Railroad Administration)
Transportation	Wheel-bearing temperature and derailment sensors with automatic air brake actuator	Weapon fuzing, sensors, explosive actuators, special materials (NITINOL), communications links	Prototype testing is continuing. A new sensor is being developed to monitor roller bearings in addition to the journal bearing previously considered. Tests of this sensor will be conducted early in 1978.	85K	160K	.2	1.7	NSWC	FAA
Transportation	Develop methods for advising aircraft of Omega disturbances	Passive sensing wave propagation guidance and navigation	Documents and concepts developed 4-102						

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TRANSPORTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Transportation	Design and build self-powered detector for traffic counting and control	Magnetometry; magnetic sensor technology	An engineering prototype has been designed, fabricated and tested. All specifications have been met except operation at extreme temperatures. A design change to correct this is being made. Construction of 20 units will begin early in 1978.	140K	44K	2.0	.4	NSWC	DOT (Federal Highway Administration)
Transportation	Provide dewatering system for recovery of the booster of the space shuttle craft	Submarine engineering, deep ocean technology, unmanned submersibles, remote piloted vehicles	Design and fabrication complete; system testing in process	609K	0	4.5	0	NSWC	NASA
Transportation	Develop low cost simulator with radar and visual displays for boat operator training	Display devices and equipment, command and control, radar simulators	New project	506K	295K	3.0	3.5	NSWC	USCG

4-103

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TRANSPORTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Transportation	Adaptation of DOD life-cycle costing techniques to an Urban Mass Transit System	Life cycle costing	Areas of applicability have been identified and the project has been expanded to include implementation plans.	69K	5K	1.0	.1	NUSC	Urban Mass Transportation Administration
Transportation	Flight safety - Experimentally develop design guidelines for devices that will contain gas turbine engine rotor burst fragments	Aircraft engines RDT&E	Tests of seven Kevlar 29 containment rings have been conducted in the NAPTIC Rotor Spin Facility. Weight savings of approximately 250/ were achieved over a steel ring used to contain turbine disc fragments.	21K	0	0	0	Naval Air Propulsion Test Center	NASA
Transportation	Flight propulsion- Determine the LCF life of a ceramic blade-metal disc attachment design when subjected to simulated temperature and speed cyclic testing in the NAPTIC Rotor Spin Facility	Aircraft engines	Tests are underway to establish the proper cyclic temperature gradient across the blade and disc.	30K	0	1.0	0	Naval Air Propulsion Test Center	NASA

4-104

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TRANSPORTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Transportation	Support USCG Omega Navigation System Operation Detail to assure accurate and reliable propagation corrections	Electronics, wave propagation, navigation	Support ongoing	43.4K	317K	3.4	2.7	NOSC	USCG (Omega Navigation Systems Operation Detail)
Transportation	Install a system for remotely monitoring the passing of vessels in a ship channel	Magnetic sensing; telemetry	System designed, fabricated and tested in the field. Prototype installation to be made in the St. Mary's River near Sault Ste. Marie, MI.	47.2K	5K	.5	.1	NSWC	USCG
Transportation	Evaluate Short Range Recovery (SRR) helicopter candidates	Provide flying qualities and performance expertise for test and evaluation of SRR helicopter	Preparing test plan	13K	150K	.5	6.0	Naval Air Test Center	USCG

4-105

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TRANSPORTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Transportation	To explore application of gas lubricated foil bearings to the new Chrysler automotive gas turbine engine	Fundamental Gas Lubricated Bearing Technology evolved under ONR sponsored research programs	New designs of gas lubricated foil bearings have been produced and prototype bearings performance is being evaluated in gas turbine engines on test.	100K	0	2.0	0	ONR	ERDA
Transportation	Evaluate new techniques in windscreen anti-icing and main and tail rotor de-icing on UH-1 aircraft	Provide knowledge of Navy icing test facilities test techniques and applications of previous experience	Defined icing characteristics flight envelope criteria and evaluated ice detection instrumentation	10K	0	.1	0	Naval Air Test Center	U.S. Army
Transportation	To determine a practical method of transporting school children over frozen tundra	Arctic Surface Effect Vehicle	Preliminary discussion held	UNFUNDED		.1	0	DTNSRDC	State of Alaska

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF TRANSPORTATION

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Transportation	Minimum sea ice thickness requirements for transporting heavy crane by tractor-trailer over underground sea ice offshore of North Slope			0	0	0	0	CEL	Crowley-Maritime Offshore Services
Transportation	Passive restraint systems for vehicles	Expertise in non-toxic smokeless propellants for safety bag inflation	Responded to industry requests for data	None	Unknown	0	0	NAVORDSTA (Indian Head)	Ford Motor Company, Allied Chemical Corp., Rocket Research Corp., Thiokol Corp.
Transportation	Remote tracking of Arctic pack ice on the continental shelf	Remote buoy technology	Remote unmanned air droppable buoy with satellite data link communications demonstrated	50K	50K	1.0	1.0	ONR	Shipping and oil industry
TOTAL				2410.2K	1193K	23.72	17.4		
				Includes 10K, DOD					
				Includes .1, DOD					
4-107									

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MISCELLANEOUS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Miscellaneous (Civil Engineering)	Develop guidelines to assist bridge planners in the design and siting of highway struc- tures in areas which are subject to potential lique- faction from earth- quakes	Civil engineering, soil mechanics, earthquake engi- neering	A two-volume design guide is in the final stages of preparation for publication.	53K	5K	.6	0	CEL	Federal Highway Administration
Miscellaneous (Civil Engineering)	#Investigate the feasibility of new and innovative tech- niques for the safe and economical design of buried culverts.	Civil engineering, structural engi- neering	A survey of existing design techniques for soil bridge culverts, the development of analytical techniques to evaluate current design con- cepts and the categorization of types of materials useful for soil stabilization and backpacking was completed. By mutual agreement, CEL ter- minated all work as the prin- cipal investigator accepted a position elsewhere.	43K	0	.8	0	CEL	Federal Highway Administration

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MISCELLANEOUS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Miscellaneous (Navigation)	Publish an almanac for surveyors and cadastral engineers	Astronomy and navigation	Almanac prepared and printed annually	10K	10K	.2	.2	Naval Observatory	Dept. of Interior, Bureau of Land Management
Miscellaneous (Time)	Consultation services	Precise time utilization	Continuing	3K	3K	.2	.2	Naval Observatory	NBS, National Research Council, State Department, Air Force
Miscellaneous (Navigation)	Pre-compute and tabulate solutions of navigation sighting reductions	Astronomy and navigation	Updated tables provided to sponsor at 5-year intervals	0	0	0	0	Naval Observatory	Defense Mapping Agency, Hydrographic Center
Miscellaneous (Handbook)	Preparation of Infrared Technology Handbook	Infrared physics and technology	Manuscript being readied for publication	200K	0	4.0	0	ONR (Chicago)	Defense Logistics Agency
Miscellaneous (Time)	Feasibility study for improved clocks at SATCOM terminals	Utilization of Observatory time base and instrumentation	Test equipment prepared and testing to be completed in FY 77	10K	10K	.3	.3	Naval Observatory	DCA
			4-109						



## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MISCELLANEOUS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING			MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 79	FY 77	FY 78		
Miscellaneous (Develop pro- duction pro- cess to apply R&D outcomes)	REVNAT (Re-entry Materi- als) Program 1. Metal Matrix Composites 2. Carbon-Carbon 3. Bulk Graphite; Develop production process for the use, initially, of three of the five firms in the private sector that per- formed the R&D on these materials (aluminum- graphite composite the first) (Report MT-044 April 1977 "Metal Matrix Composites")	Development of pro- duction process and equipment for manu- facture of this product	Program is in Phase II: target 2000 lbs/year	Is now on a complete project basis					NAVORDSTA (Louisville)	NAVSEA
	Miscellaneous (Public Works Management System)	Public works main- tenance management expertise, computer technology/exper- tise	Six seminars held in FY 1977.	6.5K	10K		0	0	Naval Facilities Engineering Command	Naval Material Command
			4-110							

## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MISCELLANEOUS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Miscellaneous (Productivity)	The City of San Diego was recently awarded a HUD grant to conduct an analysis to determine different methods of increasing organizational effectiveness, raising productivity, and enhancing job satisfaction	Organizational development, personnel performance, productivity measurement technology	Advice and consultation given; incorporated in project design	UNFUNDED		.1	.1	Navy Personnel Research and Development Center	City of San Diego
Miscellaneous (Behavioral Science)	During the course of a FY both the city and county of San Diego have raised questions relating to NPRDC program areas and in which they have need for technical data and information.	Behavioral science technology	Answers, data, information and other responses have been provided on a continuing basis.	UNFUNDED		.2	.2	Navy Personnel Research and Development Center	City of San Diego, County of San Diego

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## SECTION 4

FY 1977

## TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MISCELLANEOUS

TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Miscellaneous	Advising local school district on obtaining government surplus equipment	Surplus listings	Continuing	UNFUNDED		.1	0	NADC	Local schools
Miscellaneous (Ordnance)	Computer-Aided Design-Propellant Actuated Device (CAD-PAD)	Expertise in cartridge and propellant actuated device RDT&E and pilot production	Supplied requests for CAD-PAD items not available from industry sources	500K	550K	10	10	NAVORDSTA (Indian Head)	Various firms working on DOD contracts; some small businesses
Miscellaneous (Information Transfer)	Review requirements, documentation, conduct liaison and information exchange with NOSC technical personnel	ASW, underwater acoustics, adaptive signal processing, information theory, radar detection, antimissile defense, fire control, communications	Service provided as requested	0	0	0	0	NOSC	Ocean Technology, Inc.; Interstate Elex Corp.; Science Consultants; Gard, Inc.; Boeing Aerospace; Lockheed Calif. Company
			4-112						

## SECTION 4

FY 1977

TECHNOLOGY TRANSFER PROJECTS IN THE AREA OF MISCELLANEOUS  
LISTED BY SPONSOR

PROBLEM AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		PERFORMING ACTIVITY	SPONSOR
				FY 77	FY 78	FY 77	FY 78		
Miscellaneous	Supply HBNQ to industrial contractors	Expertise in converting needle-form nitroguanidine to more processible form	Supplied contractual needs of Aerojet, Hercules and Atlantic Research Corp. for HBNQ in Std. ARM, Tartar, Hawk, and MK 56 Std. missiles	1300K	1400K	5	5	NAVORDSTA (Indian Head)	Aerojet, Hercules, and Atlantic Research
Miscellaneous	Improved booster for Terrier missile (SM-2)	Expertise in refurbishing used missile hardware in extensive rework programs	Supplied once-fired chambers to Aerojet, Hercules, Rocketdyne and Thiokol for demonstration firings	34K	180K	1	4	NAVORDSTA (Indian Head)	Firms cited
Miscellaneous (Fabrication Technology)	Narrow gap welding system	Steel welding technology	Completed	0	0	0	0	DTNSRDC	Sciaky Bros.
TOTAL				2160K <sup>1</sup>	2168K <sup>2</sup>	22.5 <sup>3</sup>	20 <sup>4</sup>		
				<sup>1</sup> includes 216.5K, DOD					
				<sup>2</sup> includes 20K, DOD					
				<sup>3</sup> includes 4.3, DOD					
				<sup>4</sup> includes .3, DOD					
				4-113					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Analysis and Testing	*Hydrostatic pressure testing of five sets of armored cables and junction boxes	Deep ocean laboratory facility	Tests completed	1.4K	0	.01	0	Kintec, Inc.
CEL	Analysis and Testing	*Hydrostatic pressure test on one television camera	Deep ocean laboratory facility	Test completed	.45K	0	0	0	Hydro Products, Inc.
CEL	Analysis and Testing	*Electrical transient supply line tests on automatic detection and tracking equipment	Electrical test facility	Test completed	1.2K	0	.01	0	ITT Gilfillan, Aerospace Electronics - Components and Energy Group
CEL	Analysis and Testing	*External hydrostatic pressure test on six pressure housings	Deep ocean laboratory facility	Tests completed	2.8K	0	.01	0	Rockwell Inter- national - Marine Systems Division

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Analysis and Testing	*Hydrostatic pressure test of one transducer	Deep ocean laboratory facility	Test completed	.4K	0	5	5	International Transducer Corporation
CEL	Analysis and Testing	*External hydrostatic pressure tests on six propulsion and three auxiliary silver zinc batteries for TRIESTE	Deep ocean laboratory facility	Tests completed	7.2K	0	.01	5	Energy Research Corporation
CEL	Analysis and Testing	*External hydrostatic pressure test of four cables and accelero- meter assemblies	Deep ocean laboratory facility	Tests completed	2.4K	0	.01	5	Exxon Company, USA
CEL	Analysis and Testing	*Hydrostatic pressure tests on nine concrete and steel slab enclo- sures	Deep ocean laboratory facility	Tests completed	7.6K	0	.02	5	Boeing Company



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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Computer Technology	Transfer the technology developed in an automated computer program for the design and analysis of buried pipe culverts from the research and development study to field applications	Computer-aided design, utilization	Efficiency improvements in computer program CANDE and movie describing capabilities and application completed; engineering manual, system manual, and user's manual completed. Seminars were conducted at several locations for prospective users. Project complete	6K	0	.1	0	Federal Highway Administration
	Environment	*Develop an oil spill collection/removal system for open sea application based on broadcasting, harvesting and recycling polyurethane foam sorbent materials	Marine engineering; oils, lubricants, and hydraulic fluids	Completed system performance tests. Currently studying flow of oil around a ship's hull to optimize design and placement on a vessel of opportunity. Objective is a lighter and more compact system, capable of being mounted on an 82-foot cutter and larger offshore supply boats.	50K 155K	0 125K	.5 1.5	0 1.5	USCG USN
				5-3					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Health and Medicine	Investigate the relationship between international brain response and brain injury in humans with the aim of refining highway vehicle occupant injury criteria	Finite element method, biomechanics	Good correlation between experimentally measured pressures and computed model stresses has been achieved. A systematic procedure for recording head and neck injuries is being developed. Helmet designs and helmet liners are being evaluated.	140K	100K	1.5	1.0	National Highway Traffic Safety Administration
CEL	Marine Technology	Provide consulting services for the Tethered Float Breakwater Ocean Experiment	Ocean engineering, materials for marine applications, anchoring	Analysis and design of a site specific shallow water mooring system	10K	0	.1	0	State of California
CEL	Marine Technology	*Seawater immersion testing of 11 racks of specimens and two individual specimens	Marine exposure facility	Long-term explosive test underway	1.2K	0	0	0	Rockwell International-Rocketdyne Division
				5-4					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Marine Technology	Technical consulting services, problem definition	Corrosion engineering, biofouling control, materials for marine applications	Provision of consulting ser- vices to Battelle Northwest on a demand basis has been completed.	5K	5K	.1	.1	ERDA
CEL	Marine Technology	Design factors influ- encing biofouling and corrosion of OTEC system surfaces	Construction equipment, materials and supplies, organic chemistry	Final report on Design Factors Influencing Biofouling and Corrosion of OTEC System Surfaces prepared and issued	27K	0	.5	0	ERDA
CEL	Marine Technology	*Develop an antifouling marine concrete for lining the seawater intake ducts and the floating platform for an OTEC plant	Materials for marine applications, chemical engineering, corro- sion engineering	No appreciable progress made in FY 77 after receipt of funds late in August 1977	20K	80K	.1	.5	ERDA

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Marine Technology	To conceive and evaluate anchors capable of restraining the proposed concepts of Ocean Thermal Conversion Power Plants	Deep ocean anchoring, engineering properties of sea floor soils	Anchor systems analytically evaluated in terms of holding capacity, construction materials, installation technique, and cost for lateral capacities up to 40,000 kips. Those anchor systems best suited to OTEC needs identified - i.e., deadweight for most environments, piles for those few others. A free-fall emplacement technique has been outlined for the deadweight; model testing has verified its workability.	38K	0	.5	0	ERDA
CEL	Marine Technology	*Evaluate cable logging system and design deadman anchors	Anchor engineering, engineering properties of soils	CEL developed anchor holding capacity prediction schemes used to evaluate Forest Service methods for designing deadman anchors; completion of two informal reports concluded project 5-6	5K	0	.1	0	U.S. Department of Agriculture- Forest Service

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Marine Technology	Produce a document on recommended standards of practice for design and construction of concrete offshore structures	Structural engineering, materials for marine applications	CEL personnel participated in a task force committee which produced a draft report entitled "Recommended Practice for the Use of Concrete for Gravity Offshore Structures" which is now under review by the American Concrete Institute Committee on Concrete Offshore Structures.	7K	0	.1	0	Department of the Interior - U.S. Geological Survey
CEL	Marine Technology	*Provide the technique and facility to measure the drag properties of cables, wire ropes, and synthetic ropes used for moored cable structures in the ocean	Marine engineering, cable dynamics, instrumentation	Selection of drag measurement techniques and test facility were completed.	15K 15K	15K 15K	.1 .1	.1 .1	NOAA USN
CEL	Marine Technology	*Determine experimentally the material and engineering properties of partly and fully saturated concrete for use in Ocean Thermal Energy Conversion projects.	Materials for marine applications	One part of a three-part program was initiated and reported to sponsor informally. Effort was terminated by sponsor in favor of higher priority efforts. 5-7	35K	0	.5	0	ERDA

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
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PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Transportation	Determine benefits of shrinkage compensating cement in airport pavements in terms of increased strength, durability, and reduced number of joints	Concrete, instrumentation	Experimental testing of 65 test prisms to determine expansion-reinforcement-shrinkage relationships was completed.	28K	25K	.1	.4	Federal Aviation Administration
CEL	Transportation	*Minimum sea ice thickness requirements for transporting heavy crane by tractor-trailer over underground sea ice offshore of North Slope			0	0	0	0	Crowley-Maritime Offshore Services

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE CIVIL ENGINEERING LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
CEL	Miscellaneous (Civil Engineering)	Develop guidelines to assist bridge planners in the design and siting of highway structures in areas which are subject to potential liquefaction from earthquakes	Civil engineering, soil mechanics, earthquake engineering	A two-volume design guide is in the final stages of preparation for publication.	53K	5K	.6	0	Federal Highway Administration
CEL	Miscellaneous (Civil Engineering)	Investigate the feasibility of new and innovative techniques for the safe and economical design of buried culverts	Civil engineering, structural engineering	A survey of existing design techniques for soil bridge culverts, the development of analytical techniques to evaluate current design concepts and the categorization of types of materials useful for soil stabilization and backpacking was completed. By mutual agreement, CEL terminated all work as the principal investigator accepted a position elsewhere.	43K	0	.8	0	Federal Highway Administration
				TOTAL	676.7K <sup>1</sup>	370K <sup>2</sup>	7.37 <sup>3</sup>	3.70 <sup>4</sup>	
									<sup>1</sup> includes 173K, DCC
									<sup>2</sup> includes 140K, DDC
									<sup>3</sup> includes 1.6, DDD
									<sup>4</sup> includes 1.6, DDD

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FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	*To provide experimen- tal verification of theoretical methods for predicting propeller- induced periodic forces on nearby hull surfaces	Ship and propeller model testing	Final report on experiments is in preparation; propeller data sent to Stevens Institute of Technology for analytical pre- dictions.	25K	0	0	0	MARAD
		*To evaluate the effective- ness of protective coating used to reduce cavitation erosion of ship propellers	Ship hydrodynamics and model testing	Theoretical and experimental procedures are being developed.	20K	32K	.2	.3	MARAD
DTNSRDC	Analysis and Testing	To obtain technical data on hydrodynamic performance and pro- vide reliability for moored buoy systems	Moored buoy systems; analytical predic- tions	Performance of an acoustic- type current meter has been evaluated.	15K	15K	.1	.2	NOAA
				5-10					



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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	To provide technical assistance in the areas of hydrodynamics of moored cable systems	Moored systems; hydrodynamic experiments	Computer prediction of the performance of moored current meter arrays completed. A meter platform has been calibrated in the towing basin.	21K	20K	.2	.2	NOAA
DTNSRDC	Analysis and Testing	*To experimentally simulate the wave-induced mooring line motions which degrade the performance of various current meters	Simulation of environmental conditions in the laboratory	Fabrication of circular, vertical, and horizontal motion mechanisms completed	25K	0	.3	0	NOAA
DTNSRDC	Analysis and Testing	To provide technical assistance in areas of hydrodynamics of suspended cable systems to ensure successful at-sea operation of suspended current meter arrays	Model predictions of responses to sea imposed excitation	Electromagnetic type water current meter has been calibrated under steady towing conditions.	10K	20K	.1	.2	NOAA

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TEC NOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	To provide technical services regarding the hydrodynamic responses of offshore nuclear power plants to sea-imposed excita- tions	Model predictions of responses to sea- imposed excitation	Final evaluation has been com- pleted. A document to aid in future evaluation of off-shore nuclear power stations has been drafted.	27K	10K	.3	.1	Nuclear Regulatory Commission
DTNSRDC	Analysis and Testing	*To determine the degree of effective- ness of mechanical cleaning methods for Ocean Thermal Energy Conversion heat ex- changer tubes	Mechanical cleaning of seawater systems	Equipment has been designed and constructed.	165K	45K	1.6	.4	ERDA
DTNSRDC	Analysis and Testing	*To measure the wear- producing motions experienced by surface effect ship seal fin- gers operating at SES speeds up to 50 knots	High speed towing facilities	Work has been initiated.  5-12	51K	24K	.6	.2	Bell Aero- space; Textron

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	*To determine maneuver- ing characteristics of a VLCC in shallow water	Towing basin facili- ties and instrumen- tation	Instrumentation has been installed aboard the VLCC.	43K	10K	.5	.1	Exxon International Company
DTNSRDC	Analysis and Testing	*To evaluate the effects of various fence and fin designs on a surface effect ship	Model towing tank facilities	Studies of inlet geometry effects on broaching, drag and stability have been com- pleted.	293K	229K	5.0	4.0	Rohr Marine Incorporated
DTNSRDC	Analysis and Testing	To investigate the seakeeping and maneu- vering characteristics of both Coast Guard and commercial ships	Ship model experi- ments on seakeeping and maneuvering; full scale trials	Reports on liquid natural gas cargo tank accelerations at sea, USCG cutter seakeeping, and offshore supply boat. Seakeeping investigations have been published. Roll/pitch stabilization and a recording device are under study.	110K	120K	1.2	1.2	USCG
DTNSRDC	Analysis and Testing	To develop portable, containerized, advan- ced, electrical power systems for use in lighthouse application	Energy and electri- cal systems and test procedures	10-KW/5-KW and 5-KW engine generators were delivered  5-13	15K	0	.2	0	USCG

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	To develop and validate a dynamic simulation of a moored buoy in a regular and irregular seaway	Computer simulation and experimental data analysis	All experimental data has been collected, digitized and analyzed. Programs have been converted to be used on the hybrid computer.	13K	10K	.2	.2	USCG
DTNSRDC	Analysis and Testing	To experimentally evaluate liquid cargo tank overpressurization phenomena that occur during loading and unloading operations	Liquid pressurization analysis and experimental modeling	Model of cargo tank/vent system and experimental evaluation of overpressure phenomena completed. Data analysis has been initiated.	90K	0	1.0	0	USCG
DTNSRDC	Analysis and Testing	*To conduct full-scale trials at sea on the USCG POLAR STAR to measure stresses on two CP propellers	Full scale sea trial tests and evaluation	Preliminary test plan has been developed. Propeller blades have been instrumented and other electronic equipment procured.	645K	175K	7.0	2.5	USCG
				5-14					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	To improve the efficiency, reliability and performance of shipboard waste processing systems by evaluating material performance in actual incinerator environments	Materials and metallurgical analysis and testing	Metallurgical evaluation and failure analyses have been completed on several incinerators. A non-corrosion testing device has been installed aboard a Coast Guard vessel.	33K	10K	.5	.2	USCG
					15K	5K	.2	.1	
DTNSRDC	Analysis and Testing	To procure, install, operate, and evaluate marine sanitation devices (MSD) for compliance with USCG MSD certification requirements	Test facilities and technical personnel	Two MSD have been procured and evaluated; a third is under evaluation; and a fourth selected for evaluation.	11K	4K	.2	.1	USCG
DTNSRDC	Analysis and Testing	To provide buoy motion and driving function data to evaluate navigational buoy design concepts in the operational environment	Marine navigation; buoy stability	Buoys have been deployed. Repairs to telemetry packages and ground systems are underway.					
				5-15					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	*To ascertain the X-Wing demonstrator aircraft can be controlled during rotor/helo, fixed wing, or transition flight	Stability, control and aerodynamics of wings	Contract let for full scale procurement of the X-Wing aircraft model and wind tunnel testing	1,000K	4,100K	0	2.0	DARPA
DTNSRDC	Analysis and Testing	Titanium to composites bonding techniques	Materials for marine applications	Completed	0	0	0	0	Boeing
DTNSRDC	Analysis and Testing	*To study the feasibility of using one-half inch tubular, noncellu- losic ultra-filtration membranes for extending the capacity of holding tanks containing raw sewage	Sewage handling and treatment	Membranes and test materials have been procured.	10K	7K	.1	.1	U.S. Army
DTNSRDC	Analysis and Testing	Glass-reinforced plastic (GRP) piping	Materials for marine applications	Shock and fire testing com- pleted; seawater testing in progress.	0	0	0	0	A.O. Smith, Aneron Corp., Cida-Geigy Corp.
				5-16					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	Fire protection for aluminum structures using refractive felt	Ship structure survivability	Test is in progress	0	0	0	0	American Bureau of Shipping
DTNSRDC	Analysis and Testing	Fatigue test titanium box beam foil simulation structure	Materials and structures for marine applica- tions	Test is in progress	0	0	0	0	Boeing
DTNSRDC	Analysis and Testing	To determine the cause of corrosion and failure of 5-KW Diesel generator exciters and recommend corrective action	Material analysis and laboratory environmental testing	Studies and experiments have been performed to duplicate the grounding in the generator field flashing circuit. A field trial is underway.	12K	0	.2	0	U.S. Army
DTNSRDC	Analysis and Testing	Fatigue test fiber- reinforced plastic (FRP) foil structure	Materials and structures for marine applica- tions	Tests are in progress	0	0	0	0	McDonnell Douglas; Boeing
DTNSRDC	Analysis and Testing	Stress corrosion crack- ing (SCC) of HY-steels	Materials for marine applica- tions	Analysis and testing in progress 5-17	0	0	0	0	Westinghouse; General Elec- tric

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Analysis and Testing	*To confirm the feasibility of required solutions for the X-Wing stopped-rotor aircraft, including stability and control, aerodynamics and aeroelastic stability	Wind tunnel scale model testing	Blade design and analysis of structural weight for 30,000 and 40,000 pound X-Wing operational aircraft completed. Wind tunnel model tests of flight demonstration completed.	500K	0	1.0	0	DARPA
	Analysis and Testing	Composites	Materials for marine applications	Completed	0	0	0	0	McDonnell Douglas
	Environment	To procure, install, operate, and evaluate marine sanitation devices (MSD) for compliance with USCG MSD certification requirements	Test facilities and technical personnel	Two MSD have been procured and evaluated; a third is under evaluation; and a fourth selected for evaluation.	15K	5K	.2	.1	USCG
				5-18					



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Environment	To assist Great Lakes carriers to comply with Environmental Protection Agency standards by developing a system for enhancing existing marine sanitation devices	Sewage treatment system design; full scale testing	Final design of a DTNSRDC automatic sewage treatment system has been completed.	16K	30K	.3	.5	MARAD
DTNSRDC	Environment	To identify anti-fouling and anti-corrosion coatings and techniques to be used on non-heat exchange surfaces of the Ocean Thermal Energy Conversion Power Plants	Coatings, compatible with the environment, that prevent fouling and corrosion	Draft of final report completed	75K	0	1.2	0	ERDA
DTNSRDC	Environment	To assist the Commonwealth of Virginia in passing legislation on pollution abatement of small craft	Pollution control from ships	DTNSRDC pollution experts testified at hearings in Virginia, and information is being supplied to the Commonwealth.	UNFUNDED		.1	0	Commonwealth of Virginia
				5-19					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE DAVID TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
DTNSRDC	Environment	To assist in pollution abatement from state-owned ships and boats	Pollution control from ships	DTNSRDC pollution expert visited with State representatives	UNFUNDED		0	0	State of Washington
DTNSRDC	Environment	To assist in pollution abatement from state-owned ships and boats	Pollution control from ships	DTNSRDC pollution expert visited with State representatives	UNFUNDED		0	0	State of Oregon
DTNSRDC	Transportation	To determine a practical method of transporting school children over frozen tundra	Arctic Surface Effect Vehicle	Preliminary discussion held	UNFUNDED		.1	0	State of Alaska
DTNSRDC	Miscellaneous (Fabrication Technology)	Narrow gap welding system	Steel welding technology	Completed	0	0	0	0	Sciaky Bros.
TOTAL					3255K <sup>1</sup>	4871K <sup>2</sup>	22.6 <sup>3</sup>	12.7 <sup>4</sup>	
					<sup>1</sup> includes 1522K, DOD				
					<sup>2</sup> includes 4107K, DOD				
					<sup>3</sup> includes 1.3, DOD				
					<sup>4</sup> includes 2.1, DOD				
5-20									

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	PROBLEM AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR	
					FY 77	FY 78	FY 77	FY 78		
GIDEP	Analysis and Testing	Programs for testing and analysis of parts, components, and materi- als	Data available in GIDEP	Tests and research completed	*	*	0	0	Government organizations involved in hardware develop- ment and pro- curement; industry organi- zations involved in government hardware contracts	
					*	*	0	0		
GIDEP	Analysis and Testing	Failure experience (ALERTs) information on problem parts and materials	Data available in GIDEP	Defective items identified and users notified	*	*	0	0	Government organizations involved in hardware develop- ment and pro- curement; industry organi- zations involved in government hardware contracts	
					* Total GIDEP funding:					
					FY 1977	\$1.2 million	(1/3			
					FY 1978	\$1.4 million	Navy)			
				5-21						

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	PROBLEM AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR					
					FY 77	FY 78	FY 77	FY 78						
GIDEP	Fire and Safety	Safety ALERT infor- mation	Data available in GIDEP	Safety problems identified and users notified	:	:	0	0	Government organizations involved in hardware develop- ment and pro- curement; indu- stry organiza- tions involved in government hardware contracts					
GIDEP	Instrumenta- tion	Metrology related information	Data available in GIDEP	Research and calibration pro- cedures completed	:	:	0	0	Government organizations involved in hardware deve- lopment and procurement; industry organizations involved in government hard- ware contracts					
										TOTAL	1200K	1400K	0	0
										* Total GIDEP funding:				
										FY 1977 \$1.2 million (1/3 Navy)				
										FY 1978 \$1.4 million				
5-22														

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NADC	Analysis and Testing	Provided references, reports, data, extracts to industry via PENNTAP (Pennsyl- vania Technical Assistance Program)	Computer information retrieval system	Continuing	UNFUNDED		.1	0	Various small businesses
NADC	Computer Technology	Provided numerous searches on computer data bases for tech- nical reports, ex- tracts, information	Computer information retrieval system	Continuing	UNFUNDED		.1	0	Pennsylvania; Philadelphia
NADC	Computer Technology	Demonstration to eval- uate usefulness of access to the Federal Assistance Program Retrieval System for information on feder- ally funded programs available to local government and agen- cies	Computer information retrieval system	Continuing	0	0	0	0	Dept. of Agriculture (Rural Deve- lopment Service)

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NADC	Energy	Demonstrated use of airborne infrared for detecting heat loss from buildings	Airborne infrared system	Initial airborne tests com- pleted; other experiments being proposed	UNFUNDED		.3	0	Philadelphia; PA League of Cities
NADC	Environment	Advisory function	Sensor technologies	Continuing	UNFUNDED		.1	0	Philadelphia Mayor's Science and Technology Advisory Council
NADC	Fire and Safety	Advise fire fighters on thermal protection developments	Thermal protection expertise	Continuing	UNFUNDED		.1	0	Pennsylvania; Philadelphia local fire companies
NADC	Health and Medicine	Determine physiologi- cal effects of exten- ded breathing of pure oxygen	Test chambers, aero- space medical exper- tise	Tests to be continued	0	30K	0	.5	NASA

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NADC	Health and Medicine	Provided recommendations in areas of burn treatment and thermal protection	Thermal protective studies, analysis, experiments	Report completed	UNFUNDED		.1	0	Pennsylvania Governor's Commission on Fire Protection and Control
NADC	Health and Medicine	Loan of sensitive microphones for stroke and aneurism research	Communications technology	Continuing tests	UNFUNDED		.1	0	Stroke Clinic, Cincinnati General Hospital
NADC	Health and Medicine	Loaned a voice display system for use as a speech training aid for brain-injured children	Communications, visual display	Continuing tests	UNFUNDED		.1	0	Institute for Achievement of Human Potential (Philadelphia)
NADC	Instrumentation	Airborne sensor system definition/configuration; Project Aireye	Airborne sensor technology	Alternatives of appropriate sensor systems defined; configuration selected	412K	0	6.0	0	USCG, DOT
				5-25					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NADC	Instrumentation	Modifying Navy radar for search operations	Radar technology	Evaluation of modified radar completed; recommendations made	523K	60K	2.0	1.0	USCG, DOT
NADC	Instrumentation	Advise planning com- mission on use of airborne sensors for imagery to assist in planning function	Airborne sensor technology	Continuing	UNFUNDED		.1	0	Bucks County, Pennsylvania
NADC	Technological Guidance	Participated in Business Opportunity Conferences providing patent and other tech- nical information and reports to companies	Patents; technical reports; technology transfer informa- tion	Continuing	UNFUNDED		.1	0	Dept. of Commerce; Small Business Administration
NADC	Miscellaneous	Advising local school district on obtaining government surplus equipment	Surplus listings	Continuing	UNFUNDED		.1	0	Local schools
TOTAL					935K	90K	9.3	1.5	
5-26									



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR ENGINEERING CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Air Engineering Center	Analysis and Testing	Determine the condi- tion of grease lubri- cated bearing rail- road cars by analy- zing grease samples	Wear particle analysis based on newly devel- oped diagnostic tech- niques	Wear particle analysis per- formed on railroad bearings	UNFUNDED		0	0	DOT
Naval Air Engineering Center	Analysis and Testing	Monitor condition of engine cylinder walls following glass peening of cylinder wall	Tribology (oil analysis)	Oil sampling procedures developed	UNFUNDED		0	0	ERDA
Naval Air Engineering Center	Analysis and Testing	Diesel engine oil sample analysis	Tribology (oil analysis)	Oil samples taken/wear particles analyzed	UNFUNDED		0	0	Michigan Technological Institute
							0	0	
				TOTAL			0	0	
				5-27					

## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR PROPULSION TEST CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Air Propulsion Test Center	Analysis and Testing	Characterize the strain and failure of Kevlar epoxy polar weave fly- wheel that is spun to destruction	Energy storage	Test set-up is underway; pro- gress will be completed by 31 Oct 1977.	41K	0	1.0	0	NSWC
Naval Air Propulsion Test Center	Transportation	Flight safety - Experi- mentally develop design guidelines for devices that will contain gas turbine engine rotor burst fragments	Aircraft engines RDT&E	Tests of seven Kevlar 29 con- tainment rings have been con- ducted in the NAPTIC Rotor Spin facility. Weight savings of approximately 250% were achieved over a steel ring used to contain turbine disc fragments.	21K	*	0	0	NASA
Naval Air Propulsion Test Center	Transportation	Flight propulsion - Determine the LCF life of a ceramic blade- metal disc attachment design when subjected to simulated tempera- ture and speed cyclic testing the NAPTIC Rotor Spin Facility	Aircraft engines	Tests are underway to esta- blish the proper cyclic temperature gradient across the blade and disc.	30K	0	1.0	0	NASA
TOTAL					92K <sup>1</sup>	0	2.0 <sup>2</sup>	0	
					<sup>1</sup> includes 41K, DOD				
					<sup>2</sup> includes 1, DOD				

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR TEST CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Air Test Center	Communications	Test telephone cables and equipment for lightning vulnerability	"Marx" generator and high current light- ning simulator	Navy lightning simulator is being used to test telephone cables, lightning arresters, and lightning suppressors for ability to withstand high voltage and current tran- sients.	3K	3K	.2	.2	Rural Elec- trification Administration (USDA)
Naval Air Test Center	Environment	Evaluate HH-3F in tow environment	Provide test and evaluation expertise for helicopter in tow environment. Expertise includes flying qualities, performance, and structures	Coast Guard in process of writing work order	0	200K	0	8.0	USCG
Naval Air Test Center	Transportation	Evaluate Short Range Recovery (SRR) heli- copter candidates	Provide flying quali- ties and performance expertise for test and evaluation of SRR helicopter	Preparing test plan	13K	150K	.5	6.0	USCG

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## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL AIR TEST CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Air Test Center	Transportation	Evaluate new techniques in windscreen anti-icing and main and tail rotor de-icing on UH-1 aircraft	Provide knowledge of Navy icing test facilities test techniques and application of previous experience	Defined icing characteristics flight envelope criteria and evaluated ice detection instrumentation	10K	0	.1	0	U.S. Army
				TOTAL	26K <sup>1</sup>	353K	.8 <sup>2</sup>	14.2	
					<sup>1</sup> includes 10K, DOD				
					<sup>2</sup> includes .1, DOD				

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL BIOSCIENCES LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Biosciences Laboratory	Analysis and Testing	*Laboratory support: testing of new anti- microbials in experi- mental coccidioido- mycosis of animals	Containment facilities and mycology	Miconazole has proven to be effective in mice with coccidioidomycosis and in preliminary studies in man.	26K	30K	.6	.7	Janssen R&D, Inc.
Naval Biosciences Laboratory	Health and Medicine	Environmental and zoonotic diseases: determine those diseases which occur naturally in fur seals and their mechanisms of survival in the ocean environment	Microbiology, virology and epidemiology	Fur seals have naturally- occurring viruses which are apparently transmissible to a variety of life forms such as fish and terrestrial mammals including primates.	40K	42K	1	1	Dept. of Commerce
Naval Biosciences Laboratory	Health and Medicine	Public health: to prepare test reagents for Histoplasma capsulatum (Histo- plasmin).	Mycology and contain- ment facilities	Reagents prepared were more active than previously avail- able materials. Repeated injection of the histoplasmin did not induce antibody forma- tion.	30K	35K	1	1	FDA

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL BIOSCIENCES LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Biosciences Laboratory	Health and Medicine	Public health: to augment the readily detectable immunolog- ical responses to a nonliving anti- coccidioidal vaccine	Mycology and contain- ment facilities	A soluble component of spherule walls influenced survival of mice infected with coccidioi- domycosis and augmented dermal hypersensitivity.	25K	25K	.7	.7	NIH
Naval Biosciences Laboratory	Health and Medicine	Public health: oncogenicity of inhaled arsenic com- pounds	Aerosol science	Chronic exposure of mice to arsenic aerosols for 10 months has revealed no evidence of cancer.	50K	50K	.6	.6	EPA
Naval Biosciences Laboratory	Health and Medicine	* Public health: moni- tor biological burden in habitats refitted to conserve energy	Aerobiology	Field sampling units are under construction for test.	70K	200K	2.0	6.0	ERDA

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL BIOSCIENCES LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Biosciences Laboratory	Health and Medicine	Public health: deter- mine properties and hazards of virus aerosols	Aerosol science and virology and con- tainment facilities	Hazards of working with viruses are significant, but relative risks can be calculated and control measures instituted.	73K	0	4.5	2.0	NCI
Naval Biosciences Laboratory	Health and Medicine	To determine the mechanisms whereby an exotic virus of marine origin has been introduced into and spread among a dome- stic animal species	Virology and epide- miology	A calicivirus first isolated from California sea lions has twice been isolated from domestic swine in California.	18K	35K	.6	1	USDA
Naval Biosciences Laboratory	Health and Medicine	* Public health: deter- mine survival of E. coli strains mated for low survival	Aerobiology	A wild strain has been tested as a comparative standard.	47K	82K	1	2	HEW

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL BIOSCIENCES LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Biosciences Laboratory	Health and Medicine	*Public health: test- ing of a new anti- fungal agent in experi- mental coccidioidomy- cosis of animals	Containment facili- ties and mycology	Oral administration of Ambruticin (W7783) is life sustaining and/or curative in mice infected with coccidioid- omycosis.	36K	36K	1	1	Warner- Lambert
Naval Biosciences Laboratory	Health and Medicine	Public health: anti- herpes agents in algae	Virology, biochem- istry	Anti-viral agents have been found and are being tested.	21K	10K	.6	.3	State of California Sea Grant
Naval Biosciences Laboratory	Health and Medicine	Vitamin C effects on immunity	Aerobiology	No difference to aerosol challenge between animals fed high C or low C diets	5K	0	.2	0	U.S. Army
TOTAL					441K	545K	13.8 <sup>2</sup>	16.3	
					<sup>1</sup> includes 5K, DOD				
					<sup>2</sup> includes .2, DOD				
5-34									



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL COASTAL SYSTEMS LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NCSL	Analysis and Testing	Test and analysis of superconducting gradiometer	Special sensor tech- nology	Flight tests complete; final analysis in process	308K	0	4.0	0	Johns Hopkins University (Applied Phy- sics Lab.)
NCSL	Environment	Project to determine effects of off-shore oil extraction and assess effects on marine environment of Bunker C fuel derived from shale oil	Use of Navy off-shore Stage I, logistic and technical support	New start - June 1977; support agreement FY 77-78 negotiated and signed	110K	130K	4.3	4.3	EPA
NCSL	Environment	A towed planing sled for fast surface delivery of pollution control equipment	Hydrodynamics, naval architecture, marine engineering	Project completed June 1977; sled performed well. Modified version of sled delivered to Coast Guard with final report	87K	0	1.6	0	USCG

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL COASTAL SYSTEMS LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NCSL	Instrumentation	Install and remove instrumentation on submarine without drydocking	Diving technology	FY 77 installation and removal complete	29K	29K	.2	.2	General Dynamics
NCSL	Instrumentation	Provide support to Army LACV-30 tests	Test range and instrumentation technology for tracking and environmental data collection	New start - Dec 1976 Completed - June 1977	105K	0	1.5	0	U.S. Army
NCSL	Law Enforcement	*Project to develop defense of Air Force bases & installations from waterborne intrusion by thieves and saboteurs	Inshore Undersea Warfare (IUW) Sensor Technology	New start - May 1977 Design and construction of target detection unit nearing completion	256K	1468K	.7	5.6	USAF
NCSL	Marine Technology	Project to refine methods of mapping shoals, reefs, and shallow water depths using multispectral scanner	Remote sensing technology and associated analytical methods	Analysis of 1976 fly-over data complete - 1977 fly-over data collected	39K	100K	.6	.7	Defense Mapping Agency
TOTAL					934K <sup>1</sup>	1727K <sup>2</sup>	12.9 <sup>3</sup>	10.8 <sup>4</sup>	
					<sup>1</sup> includes 400K, DOD				
					<sup>2</sup> includes 1568K, DOD				
					<sup>3</sup> includes 2.8, DOD				
					<sup>4</sup> includes 6.3, DOD				
5-36									

## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL ENVIRONMENTAL PREDICTION RESEARCH FACILITY LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Environmental Prediction Research Facility	Environment	Reprinting of articles by Dept. of Commerce in <u>Mariners Weather Log</u> ; articles excerpted from <u>Typhoon Havens Handbook for the Western Pacific and Indian Oceans</u>	Tropical meteorology, computer expertise	Reprinting of excerpted articles continuing	0	0	0	0	Department of Commerce
					0	0	0	0	
		TOTAL			0	0	0	0	

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL EXPLOSIVE ORDNANCE DISPOSAL FACILITY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVEODFAC	Law Enforcement	Conducted classroom presentations and practical demonstrations at five seminars for advanced bomb technicians at the FBI Academy, Quantico, VA. The classroom effort included briefings on advanced equipment involving location, detection, handling, render safe and support technology. The practical demonstration phase included the use of portable X-ray equipment and the interpretation of X-ray imagery.	Explosive ordnance disposal	Project completed	UNFUNDED		.1	0	FBI

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL EXPLOSIVE ORDNANCE DISPOSAL FACILITY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVEODFAC	Law Enforcement	Performed tests on 3/4 inch simulated pipe bombs to demonstrate their fragmentation hazard. The pipe bombs were loaded with red dot powder and were initiated with a hot wire. Tests were conducted inside sand tubes located inside the 2-foot containment vessel.	Explosive ordnance disposal	Project completed	UNFUNDED		.1	0	U.S. Postal Service
		Transferred a 40 pound (TNT) total containment vessel and related technology to US Capitol Police for use in bombing incidents. The vessel will be used to transport explosive devices to a safe area for disposal.	Explosive ordnance disposal	Project completed	UNFUNDED		.1	0	U.S. Capitol Police
				5-39					

## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL EXPLOSIVE ORDNANCE DISPOSAL FACILITY LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVE00FAC	Law Enforcement	Conducted classroom pre- sentations and practical demonstrations at a symposium for FBI Special Agents on advanced IED countermeasures equip- ment. Practical demon- strations involved the effective use of portable X-ray equipment.	Explosive ordnance disposal	Project completed	UNFUNDED		.05	0	FBI
				TOTAL	0	0	.35	0	

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL FACILITIES ENGINEERING COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Faci- lities Engineering Command	Miscellaneous (Public Works Management System)	Seminars held to explain Navy Public Works Management System	Public works maintenance management expertise, computer technology/ expertise	Six seminars held in FY 1977	6.5K	10K	0	0	Naval Material Command
					TOTAL				
					6.5K <sup>1</sup>	10K <sup>2</sup>	0	0	
					<sup>1</sup> includes 6.5K, DOD				
					<sup>2</sup> includes 10K, DOD				

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NAVY TECHNOLOGY TRANSFER PROGRAM FY 77 SUMMARY STATISTICS.(U)

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NAHRL)	Analysis and Testing	*A device for passive execution of head movements in a slow rotation room	Accurate quantitation of stressor effects resulting in motion sickness	Completed except for sound treatment	168K	0	.5	0	NASA
NMRDC (NHRC)	Health and Medicine	Consultation to Viet- namese refugees; assessment of health factors in immigration	Stress epidemiology; stress research tech- niques	Baseline consultation complete	0	0	0	0	Asian-American Mental Health Research Center, University of California at San Diego. NIMH
NMRDC (NHRC)	Health and Medicine	*Assessment of benefi- cial and nonbeneficial aspects of stress in Marine recruit train- ing	Stress research tech- nology; physiology, psychology and bio- chemical responses to human stress	Pilot studies are in the design phases; larger longi- tudinal studies in planning phase	Pending		0	0	U.S. Congress via U.S. Marine Corps Head- quarters
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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NHRIC)	Health and Medicine	Consultation to various Federal agencies on family problems related to prolonged father absence	Coping methods of families during stress	NA	0	0	0	0	U.S. Justice Dept., U.S. Indian Service, USAF Academy, DIA, DIS
NMRDC (NHRIC)	Health and Medicine	To establish shipping requirements of live animals in interstate transport	Specialty trained and experienced personnel	Established guidelines for setting of priorities and for scheduling designated flights on commercial airlines	NA	NA	.01	0	Civil Aero- nautics Board
NMRDC (NHRIC)	Health and Medicine	Evaluation of research proposals for federal funding	Veterinary, medical, specialty trained personnel	Conducted site visits and parti- cipated in discussions for selection of most qualified institutions	NA	0	.01	0	National Institutes of Health

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NHRDC (NMRI)	Health and Medicine	Workshop on parasitic immunology	Biomedical research relating to funda- mental and applied aspects of parasitic immunology and vac- cine development	A three day workshop was organi- zed and held for 70 partici- pants from the U.S. and other countries	5K	0	.1	0	National Institutes of Health
NHRDC (NAHRL)	Health and Medicine	Kinematic and kinetic characterization of human neck	Computer technology, biomedical instru- mentation, human sub- ject data	Data and analysis of dynamic response of human and primate head and neck to $\pm G_{xy}$ and $\pm G_{xy}$ impact acceleration submitted in final report October 1977	100K	200K	10	10	Department of Transporta- tion
NHRDC (NHRC)	Health and Medicine	Consultation with city and county officials on stress-related disability retirements	Stress and environ- mental medicine	Two conferences have been held to clarify issues and to deter- mine how to attack the problem.	NONE	0	.02	.05	San Diego Science Advisor

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NHRG)	Health and Medicine	Training of psychiatric residents in stress research and psychosomatic consultation	Human stress and strain technology	Two complete groups of residents have been trained in stress terminology and research.	0	0	0	0	University of California, San Diego Medical School University Hospital
NMRDC (NHRG)	Health and Medicine	Medical and psychological aspects of retirement from the military	Sociobiology and stress research techniques	Project is in design phase.	Pending		Pending		Institute of Social Research, University of Michigan -- ONR pending
NMRDC (NHRG)	Health and Medicine	Stress in the post-heart attack patient	Stress research techniques; consultation	Information has been transferred facilitating medical research	0	0	0	0	Harvard University Medical School, Mass. General Hospital
				5-45					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NHRDC (Karolinska Institute, Stockholm, Sweden - NHR1)	Health and Medicine	Development of a specific antitoxin for protection from lethal <u>Pseudomonas</u> <u>aeruginosa</u> burn infections	Microbiology technology	Specific exotoxin in <u>P.</u> <u>aeruginosa</u> has been isolated and purified. The biological activity of the toxin in vitro in tissue culture and <u>in vivo</u> in mice has been characterized; i.e., inhibits protein synthesis in both systems. The possible synergistic effect between toxin and proteases will be studied in the mouse infec- tion model.	15K	0	.25	0	NMRI and Karolinska Institute, Stockholm, Sweden
NHRDC (NHRC)	Health and Medicine	Consultation on research techniques in coronary heart disease risk factors	Stress research techniques; con- sultation	Consultation has been com- pleted on the heritability of behavioral coronary risk factors.	0	0	0	0	Harold Brunn Institute, Mount Zion Hospital

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NHRIC)	Health and Medicine	Education in labora- tory animal and veter- inary medical tech- niques and practices	Veterinary, medical, specialty trained personnel	Conducted lectures and tours of Navy laboratory Animal Research Facilities	NA	0	.01	0	Northern Virginia Community College
NMRDC (NHRIC)	Health and Medicine	Presentation of find- ings from the Center's research at medical schools, hospitals, and universities	Detection and reha- bilitation of alco- holism; sleep and sleep deprivation; effects of noise, heat, and other envi- ronmental stresses; effects of life stress on health and adjustment; psychi- atric personnel and programs; medical effects of captivity; family adjustment to prolonged father absence.	N/A	0	0	0	0	Medical Schools: Harvard, North- western, U. of Calif. at Irvine, Los Angeles, and San Diego. Hospitals: Mass. General; VA San Diego; VA Tacoma. Grossmont, La Mesa, Michael Reese. Universities: Chicago, Dartmouth, Hawaii, Illinois, Minnesota, Pur- due, Stanford, Wisconsin

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NMRI)	Health and Medicine	Evaluation and accreditation of programs and facilities in laboratory animal care	Veterinary, medical, specialty trained personnel	Conducted site visits of medical research institutions and attended council meetings for consideration of site visit recommendations	NA	0	.05	0	American Association for Accreditation of Laboratory Animal Care
NMRDC (NMRI)	Health and Medicine	Training and education for laboratory animal technicians	Specialty trained personnel	Attended meetings and discussion groups involved in establishing policies and requirements of training programs	NA	0	.05	0	Committee on Laboratory Animal Technicians; American Association for Laboratory Animal Science
NMRDC (NMRI)	Health and Medicine	Development of capability for typing tissues of patients who will receive organ transplants	Cryobiological techniques; tissue typing capability, computer based analytical methods	Establishment of a regional facility for storage and typing of cells; cooperative studies begun on national and international scale	160K	0	2.0	0	Georgetown Medical School

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NHRC)	Health and Medicine	Protein profiles as pre- dictor of disease	Health care	Associate acute phase proteins with illness	80K	90K	3.5	5.0	Research and Development Command, USN
NMRDC (NHRC)	Health and Medicine	The Brainstem Auditory Evoked Response (BAER), a newly developed non- invasive means of evalu- ating the functional integrity of the brain- stem auditory system, are being recorded on patient's referred to the hospital Annex of NHRC Psychophysiology Division.	Brainstem Auditory	In one study BAERs are being used to rule out retrococh- lear damage to the auditory system usually in the form of acoustic neuromas or other tumors located in the cere- bellopontine angle. In another study, the BAER is being evaluated as an aid in the diagnosis and prognosis of comatose patients. BAER information is utilized by trauma physicians who must make decisions as to main- tenance or cessation of life support. Eventually, BAER information will probably be adopted as adjunct information in determining clinical brain death.	0	0	.2	1.2	Naval Regional Medical Center San Diego

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NAHRL)	Health and Medicine	1000 Aviator Follow-up Program	Unique long term data base on 1056 aviators followed since 1940. Peri- odic follow-up exams have included extensive physio- logical and psy- chological measure- ments of the normal aging process in initially healthy young men.	All data through 1976 has been properly edited and stored on computer tapes. Publications on mortality, morbidity and frequency of many independent variables in this population contribute to the general fund of know- ledge on aging.	17K	0	.1	0	NMRDC
NMRDC (NHRC)	Health and Medicine	Rapid identification of microbiological agents	Health and patient care	Adapted to rapidly identify salmonella infections	40K	45K	2.0	2.5	Research and Development Command, USN
				5-50					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NMRI)	Health and Medicine	Treatment of civilian cases of: (a) osteo- radionecrosis, (b) osteomyelitis, (c) gas gangrene, (d) bone grafts, and (e) diving accidents	Hyperbaric therapy with air or oxygen	Cases have been treated as required.	UNFUNDED		1.5	0	Local medical authorities
NMRDC (NMRI)	Health and Medicine	Investigation of acute and chronic effects of photon and fast neutron radiation upon pulmonary and CNS function	Neurophysiology and pulmonary physiology techniques, impacting on studies of changes which might occur under hyperbaric conditions	Baseline studies of pulmonary mechanics are underway in dogs before neutron exposure. Tech- niques for chronic implantation of cerebral electrodes for neurophysiologic studies are being investigated.	9.2K	0	.2	0	National Institutes of Health, George Washington University Medical Center, NMRDC
NMRDC (NHRC)	Law Enforce- ment	Consultation with Per- sonnel Dept. of San Diego to develop and validate a test bat- tery for selection of police officers	Personnel research methods; computer programming and data processing; optical scan data processing	A battery of personality, apti- tude, and attitude tests were selected; data collection, storage, and computer analysis methods were developed and turned over to the City. A full scale validation study is underway by the City.	NONE	0	.04	NONE	City of San Diego

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NMRDC (NHRC)	Technological Guidance	Technology Transfer Conference and Work- shop (8-11 Nov 76) for small business, indu- stry and local govern- ments	Described programs and answered questions in areas of stress medicine, environ- mental factors in occupational stress, alcoholism and sleep deprivation	Responding to inquiries as they come in	0	0	.02	.04	NSF; Federal Laboratory Consortium for Technology Transfer
NMRDC (NHRC)	Technological Guidance	Technology Transfer Conference and Work- shop (18-19 May 1977), Portland, Oregon, for local governments and private industry	Described programs and answered ques- tions in areas of stress medicine, environmental fac- tors in occupational stress, alcoholism and sleep deprivation.	Responding to inquiries as they come in	0	0	.02	0	NSF; Federal Laboratory Consortium for Technology Transfer
				TOTAL	594.2K <sup>1</sup>	335K <sup>2</sup>	20.58 <sup>3</sup>	18.79 <sup>4</sup>	
						<sup>1</sup> includes 152K, DOD			
						<sup>2</sup> includes 135K, DOD			
						<sup>3</sup> includes 6.05, DOD			
						<sup>4</sup> includes 8.7, DOD			
				5-52					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OBSERVATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Observatory	Miscellaneous (Navigation)	Publish an almanac for surveyors and cada- stral engineers	Astronomy and navigation	Almanac prepared and printed annually	10K	10K	.2	.2	Dept. of Interior, Bureau of Land Management
Naval Observatory	Miscellaneous (Time)	Consultation services	Precise time utilization	Continuing	3K	3K	.2	.2	NBS, National Res. Council, State Department, Air Force
Naval Observatory	Miscellaneous (Time)	Feasibility study for improved clocks at SATCOM terminals	Utilization of Observatory time base and instru- mentation	Test equipment prepared and testing to be completed in FY 77	10K	10K	.3	.3	DCA
Naval Observatory	Miscellaneous (Navigation)	Pre-compute and tabulate solutions of navigation sighting reductions	Astronomy and navigation	Updated tables provided to sponsor at 5-year intervals	0	0	0	0	Defense Mapping Agency, Hydrographic Center
TOTAL					23K <sup>1</sup>	23K <sup>2</sup>	.73	.74	
					<sup>1</sup> includes 10K, DOD				
					<sup>2</sup> includes 10K, DOD				
					<sup>3</sup> includes .3, DOD				
					<sup>4</sup> includes .3, DOD				
5-53					1				

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEANOGRAPHIC OFFICE  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Ocean- ographic Office	Analysis and Testing	Sensor package for MAGSAT	Airborne vector mag- netometer	Navy survey instrument meets performance specifications at satellite altitudes.	NASA Test Facility used		.1	0	USGS/NASA
Naval Ocean- ographic Office	Analysis and Testing	Pressure test thermistor chain	Deep ocean test and calibration facility	Completed	.4K	0	0	0	National Data Buoy Project
Naval Ocean- ographic Office	Analysis and Testing	Pressure test cable, connectors	Deep ocean test and calibration facility	Completed	.5K	0	0	0	National Marine Fisheries
Naval Ocean- ographic Office	Analysis and Testing	Calibrate reversing thermometers	Deep ocean test and calibration facility	Completed	.5K	0	0	0	South Carolina Wildlife and Marine Resource Department
				5-54					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEANOGRAPHIC OFFICE  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Ocean- ographic Office	Analysis and Testing	Evaluate applications of shipboard gravity meter for airborne use	Specially configured A/C with Electro- static Suspended Gyro (ESG) Inertial Platform and preci- sion altimeters and navigation capability	Feasibility of making airborne gravity measurements has been demonstrated.	UNFUNDED		0	0	LaCoste Romberg
					UNFUNDED				
Naval Ocean- ographic Office	Analysis and Testing	Develop design cri- teria/performance limitations	Model of earth's magnetic field and implementing software provided	Completed	UNFUNDED		0	0	Canadian Pacific Air; Lockheed Missile & Space Corp.; Xonics, Inc.
					UNFUNDED				
Naval Ocean- ographic Office	Energy	OTEC: fouling preven- tion on installation	Marine biology, antifouling testing and prediction	Tests of materials, coatings begun	1.5K	2.5K	.1	.1	NOAA
				5-55					

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FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEANOGRAPHIC OFFICE  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Oceanographic Office	Energy	Resource management and exploration	Low level vector magnetic survey technology	50,000 linear miles completed for broad overview of continental US	350K (Navy funded)	0	1.2	0	USGS/ERDA
Naval Oceanographic Office	Energy	Offshore petroleum and mineral exploration	Airborne magnetic surveys	Data provided to the Commission for the Coordination of Off-shore Prospecting of the UN Development Program	UNFUNDED		0	0	UN Development Program for Asia and the Pacific
Naval Oceanographic Office	Environment	Improve predictions of volcanic activity re time and intensity of eruption	Low level surveys with high sensitivity and vector magnetometers	Completed two flights over Mt. Etna	UNFUNDED		0	0	Smithsonian Institution
Naval Oceanographic Office	Environment	Map ocean fronts in the western North Atlantic	Satellite HRIR imagery analysis techniques	Weekly charts are provided to sixty-nine users, including 14 in this category	No Charge		.3	.3	NOAA (NWS, NMF) USCG
				5-56					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEANOGRAPHIC OFFICE  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Ocean- ographic Office	Environment	Map location of ocean fronts in the western North Atlantic	Satellite HRIR imagery analysis techniques	Weekly charts for western North Atlantic provided 9 users in this category	No Charge		0	0	a) State-supported universities - Conn., Delaware, Florida, Mass., N. Carolina, Rhode Island, Texas b) New Bedford, Mass. - Harbor Develop. Comm.
					No Charge		0	0	
					No Charge		0	0	
Naval Ocean- ographic Office	Environment	Biofouling tests and predictions re marine paint formulations	Marine biology, simulation testing, antifouling model	Panels are immersed and assay underway.	2K		4K	0	Celanese Corp.
					No Charge		0	0	
Naval Ocean- ographic Office	Environment	Map position of ther- mal fronts in the ocean	Satellite HRIR imagery analysis	Weekly charts for western North Atlantic provided to 12 users in this category	No Charge		0	0	Nine private commercial fishermen; Environ. Res. and Tech. Corp.; SeaQuest Corp.; High Seas Corp.; Inst. of Acoustic Research
				5-57					

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FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEANOGRAPHIC OFFICE  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Oceanographic Office	Instrumentation	Corrections for OMEGA system	Model of earth's magnetic field and implementing software	Completed	UNFUNDED		0	0	USCG
Naval Oceanographic Office	Law Enforcement	Locate submerged vehicle with victim	Magnetic and side-scan sonar survey	Completed	UNFUNDED		0	0	Louisiana State Police Force
Naval Oceanographic Office	Marine Technology	Assist development of mapping and charting capability in Caribbean and Latin American countries	Coastal hydrographic survey technology	Eleven countries now under the Harbor Survey Assistance Program (HARSAP) umbrella. Surveys conducted in Panama, Haiti, Dominican Republic, Bahamas; Peru added to program.	150K	180K	3.0	3.5	Defense Mapping Agency/NAVOCCEANO
TOTAL					504.9K	186.5K <sup>2</sup>	4.7 <sup>3</sup>	3.9 <sup>4</sup>	
					<sup>1</sup> includes 150K, DOD				
					<sup>2</sup> includes 180K, DOD				
					<sup>3</sup> includes 3.0, DOD				
					<sup>4</sup> includes 3.5, DOD				
5-58									

## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN RESEARCH & DEVELOPMENT ACTIVITY LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NORDA	Marine Technology	Acoustic-optic research task	Analysis of seismograms, Lofar grams, and sona- grams	Performing laboratory research utilizing Shell Oil Company acousto-optical analyzer	1K	0	0	0	Tulane University and NORDA
				TOTAL	1K	0	0	0	

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Analysis and Testing	Evaluate acoustic decoy	ASW, torpedoes, acoustic warfare	Complete	25K	0	.4	0	The Singer Company
NOSC	Analysis and Testing	Support services to DOD contractors	T&E, calibration	Service provided as requested	20K	22K	.5	.5	Various private companies
NOSC	Communications	Improve reliability of communications using ionosphere by improving solar flare and iono- spheric disturbance prediction techniques	Communications, wave propagation, astronomy, solar emissions, solar filaments	Results indicate knowledge of radio filaments should be based on larger statistical sample and that a more con- prehensive filament study is needed.	17K	0	.2	0	NASA
NOSC	Communications	Design time and time interval modems; provide tech support in special SATCOM applications	Communications, electronics, pre- cise time, commu- nications satel- lites	Design of new MODEM complete; first unit fab. started	82K	41K	.7	.3	U.S. Army, Communications Systems Agency
NOSC	Communications	Fiber optic digital transmission link	Communications, electronics and electrical engi- neering, optics	Preliminary study completed 5-60	25K	120K	.4	1.0	USAF Communi- cations Service

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Communications	Reduction of bandwidth required to transmit video and radar images	Electronics and electrical engineering, communications, electronic components, spread spectrum techniques, image processing, control of remote piloted vehicles	TV compression hardware has been tested with a spread spectrum modem.	565K	607K	3.5	3.0	DARPA
NOSC	Communications	Assess feasibility, advantage, and characteristics of fiber optics for enhancing capabilities in communications systems	Communications, fiber optics	Completed; reports published on fiber optics for defense communications systems.	5K	0	0	0	DCA
NOSC	Communications	Develop solar flare prediction technique based on radiometry	Astronomy, radio communications, propagation, disturbance prediction, radio astronomy	Data obtained at LaPosta analyzed did not show obvious signatures for identifying and predicting active region release of high energy protons. Results suggest use of Stanford 9.1 CM data for correlation. 5-61	25K	25K	.4	.2	USAF

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Communications	Demonstrate advantages of glass fiber optics over wire cables to provide operational interconnection between computers and peripheral equipment audio and video	Electro-optics, fiber optics, EM compatibility, computers, electronics	Equipment acceptance tests completed	62K	88K	.8	1.0	North American Air Defense Command
		Evaluation of reliability and strength of fiber optic for communications	Fiber optics, communications, reliability engineering, simulated environment testing, materials	Test lab designed for measuring strength parameters and environmental effects on fiber strength. Optical strength experiments, static and dynamic fatigue measurements made under controlled environments.	185K	207K	2.5	2.1	
NOSC	Communications	Evaluate utility of a meteor burst communications system	Radio communications R.F. propagation, prediction of environmental effects on propagation	VHF antenna array concepts for aircraft developed; availability of equipment determined.	379K	300K	3.0	3.0	DCA

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Communications	Provide fiber optic video channel 80 - 400 ft. distance	Optics, fiber optics, electro-optics, electronics	Bread board tested; final version of transmitter and receiver under test	7K	0	.1	0	USAF, Air Force Weapons Lab
NOSC	Computer Technology	Develop image scan and enhancement techniques for automated mail handling	Passive sensors, optical detection, computer science, image storage and retrieval	Test bed design tested and operating; improvements in process	527K	450K	4.8	4.5	U.S. Postal Service
NOSC	Computer Technology	Provide software quality assurance support by developing configuration management plans and procedures	Computers, quality control, T&E	New project	40K	3K	.1	0	U.S. Air Force Data Automation Agency
NOSC	Computer Technology	Microprogrammable controller; for interface between two information processing systems	Computers, electronics, communications, distributed processing	OP SYS designed, software installed. Assay of test bed system underway. Production of final system underway.	328K	93K	2.7	.6	USAF; Rome Air Development Center
				5-63					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Computer Technology	Survey state-of-the-art and prepare detailed fault tolerant systems plan	Computer sciences, information theory, self-testing, re- dundancy in circuits	Completed; program plan avail- able for use in fault tolerant projects.	30K	0	.1	0	U.S. Air Force Avionics Lab
NOSC	Computer Technology	Develop new computer semiconductor chip combining memory and logic elements for im- proved capability to handle advanced symbolic computer operations	Solid state physics, computers, computer sciences, informa- tion storage and retrieval	Study contract to identify, describe, and characterize a group of arithmetic and logic operations which can be implemented on a LSI chip containing memory cells.	49K	258K	0	.1	DARPA

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Energy	Energy Advisory Board for San Diego Unified School District-member	Energy, solar energy	Monthly meetings	Some internal NOSC, but mostly after hours participation				San Diego Unified School District
NOSC	Energy	Ocean food and energy farm at sea; develop system to convert solar energy falling on ocean into synthetic gas	Energy storage, energy from ocean, ocean engineering, solar energy, kelp, materials from ocean, environment, conversion techniques, fuels	Seven acre farm emplaced. Proof that giant kelp will grow and reproduce; that sheep can digest dried kelp efficiently; that 95% dewatering can be accomplished. Preliminary economic analysis done; methane produced by anaerobic digestion. Ongoing studies: nutrition at CalTech; methane products at IGT. Pre-treatment at WRRC of USDA. Program now under private sponsorship and control	54K	0	1.0	0	American Gas Institute
NOSC	Environment	Various tasks, T&E as required by government contractors and Navy activities	Electronic and electrical engineering, communications, T&E, environment	Service provided as requested	95K	123K	1.7	2.0	Raytheon Co., ITT Gilfillan, Rockwell Collins, Langley Corp.

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Environment	Determine feasibility of using optical methods to detect ambient levels of airborne 222 Ra or 214 Bi	Atmospheric physics, optics, masers and lasers, radar detection	Quartz resonance cells and ovens fabricated and checked out. System installed for direct determination of atomic state lifetimes	63K	0	1.2	2	ERDA
NOSC	Environment	San Diego City Noise Advisory Board - review and recommend on noise ordinances - Dr. R. W. Young, a NOSC scientist	Acoustics	Periodic meetings	Some internal funding by NOSC, but mostly after hours participation				City of San Diego, San Diego, California
NOSC	Environment	County Noise Control Hearing Board - review and recommend on noise ordinances and problems; appeal hearings on ordinance violation - Mr. R.S. Gales, a NOSC scientist	Acoustics	Periodic meetings	Some internal funding by NOSC, but mostly after hours participation				San Diego County Board of Supervisors
				5-66					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Environment	Describe acoustic environment for yellowfin tuna to aid in reducing porpoise mortality in purse seine fishing	Acoustics, marine biology, bioacoustics, tuna fishery, porpoises, sonar	Determined acoustic source levels of seiners; investigated spinner and spotter noise and relationship between porpoise behavior and fishing; porpoise can "see" nets acoustically.	54K	48K	.7	.5	San Diego State University
NOSC	Environment	Head National Coordinating Council on Environmental Noise. The Council has 25 representatives from regions in the United States. Its purpose is the dissemination of environmental noise information.	Acoustics	Active ongoing participation	Some internal funding by NOSC, but mostly after hours participation				Acoustical Society of America
				5-67					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Environment	Marine Wave Protection: Experiments, tests, engineering and studies to validate tethered floating breakwater in the open ocean. Carry out development and demonstration for sti- mulation of acceptance of concept by industry	Marine engineering, logistics, dynamic oceanography, marine environment, tethered buoys	The TFA moored in San Diego Bay transferred to San Diego Unified Port District for expansion and further evaluation with tech support still being provided by NOSC. Maritime Administration study of commercial feasibility completed. Ocean prototype now installed at Imperial Beach, CA being monitored.	470K	456K	4.0	3.0	U.S. Army Corps of Engineers and NAVFAC
					50K	100K	.6	1.4	
NOSC	Health and Medicine	Telecommunications requirements and cost for computer assisted practice of cardiology (CAPOC) system	Communications, computers, clinical medicine, bio-medical engineering	NOSC Technical Report 104 issued - computer assisted practice of cardiology, Phase I - communications study for Naval Regional Medical Center (NRMC) 16 March 1977.					DOD Tri-Service Medical Information System
				5-68					

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Health and Medicine	Develop an integrated mobility system for paraplegics	Human factors engi- neering, man-machine relations, bioengi- neering, prosthetics	Model of a standup ambulator for paraplegics as part of a wheelchair completed; design to integrate with a wheel- chair underway	103K	105K	1.2	1.4	VA
NOSC	Law Enforce- ment	Develop requirements for shipboard subsys- tems to meet mission requirements	Systems analysis, systems integration, operations research	10 year systems plan, catalog of required task-capabilities developed	783K	500K	6.2	3.4	USCG
NOSC	Law Enforce- ment	Characterize USCG in- formation needs by subject, message size, frequency of need, accuracy, timeliness and classification; develop link plan.	Communications, computers, operations research	Completed	35K	0	.6	0	USCG
NOSC	Law Enforce- ment	Design, build and test a buried cable intru- sion detection system	Seismic detection, electronics, com- ponents, reflecto- metry	Specific signal design com- pleted. Simulations of signal processing for various inverse filters begun. 5-69	200K	230K	1.6	1.6	Electronics Systems Pro- gram Office, USAF

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Marine Technology	Growth and reproduction of dolphins in eastern tropical Pacific	Marine biology, dolphins	Observations nearly complete and prepared for computer storage for analysis	14K	0	.2	0	National Marine Fisheries Service
NOSC	Marine Technology	Support aerial surveys to determine popula- tion size of porpoises in eastern tropical Pacific affected by US purse seine fishing for yellowfin tuna	Marine biology, mathematics and statistics	Complete; report prepared	17K	0	.2	0	National Marine Fisheries Service
NOSC	Marine Technology	Provide support to Marine Physical Laboratory	Administration and management	Continuing support as requested	11K	4K	0	0	University of California, San Diego
NOSC	Marine Technology	Provide Chief Scientist to the Deep Sea Drill- ing Project	Dynamic oceanogra- phy, physical oceanography, deep ocean technology	Ongoing service provided	42K	10K	1.0	.2	Scripps Institute of Oceano- graphy

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Marine Technology	Determine source of damage to sonar boot	Environmental biology, biology, sharks	Damage believed to be from a small species of shark	10K	10K	.1	.1	Raytheon Company
NOSC	Marine Technology	Assemble and implant a wave follower to obtain surface mea- surements to correlate with airborne SEASAT-A equivalent measurements	Dynamic oceanography, test and services, ocean engineering	Complete	60K	0	.7	0	NASA
NOSC	Marine Technology	Determine possible radiological and bio- logical effects of accidental marine deposition of radio- active materials	Radiation shielding, radiation protection, ocean sciences, ocean engineering	Pure clad plutonium oxide sam- ples implanted 1975 recovered for inspection	50K	50K	.3	.3	ERDA

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Transportation	Develop methods for advising aircraft of Omega disturbances	Passive sensing wave propagation guidance, and navigation	Documents and concepts developed	85K	160K	.2	1.7	FAA
NOSC	Transportation	Provide dewatering system for recovery of booster of the space shuttle craft	Submarine engineering, deep ocean technology, unmanned submersibles, remote piloted vehicles	Design and fabrication complete; system testing in process	609K	0	4.5	0	NASA
NOSC	Transportation	Support USCG Omega Navigation System Operations Detail to assure accurate and reliable propagation corrections	Electronics, wave propagation, navigation	Support ongoing	434K	317K	3.4	2.7	USCG (Omega Navigation Systems Operation Detail)
NOSC	Transportation	Develop low cost simulator with radar and visual displays for boat operator training	Display devices and equipment, command and control, radar simulators	New project	506K	295K	3.0	3.5	USCG
				5-72					

## FY 1977

### TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL OCEAN SYSTEMS CENTER LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MAN YEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NOSC	Miscellaneous (Information Transfer)	Review requirements, documentation, conduct liaison and information exchange with NOSC technical personnel	ASW, underwater acoustics, adaptive signal processing, information theory, radar detection, antimissile defense, fire control, communications	Service provided as requested	0	0	0	0	Ocean Technology, Inc.; Interstate Elex Corp.; Science Consultants; Gard, Inc.; Boeing Aerospace; Lockheed Calif. Company
				TOTAL	6116K <sup>1</sup>	4622K <sup>2</sup>	52.6 <sup>3</sup>	38.1 <sup>4</sup>	
					1 includes 2502K, DOD				
					2 includes 2528K, DOD				
					3 includes 20.5, DOD				
					4 includes 17.3, DOD				



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL ORDNANCE STATION (INDIAN HEAD)  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVORDSTA (Indian Head)	Communication	Silver recovery	Chemical engineering for environmentally safe recovery of silver from film	Placed plant in safe, effi- cient operation at NOS, Indian Head, MD	250K	300K	5.0	6.0	Defense Logistics Agency
NAVORDSTA (Indian Head)	Energy	Amine fuel production	New synthesis for fuel with safe inter- mediates for major improvement in environmental im- pact	Back-up plants under construc- tion for amine fuels and safe recovery of byproducts	Extensive, but not releasable to public		0	0	USAF, Kelly AF Base, San Antonio, TX

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL ORDNANCE STATION (INDIAN HEAD)  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVORDSTA (Indian Head)	Energy	Purify MAPD (propellant curative) for defense contracts	Efficient vacuum dis- tillation techniques for thermally sensi- tive chemicals	Several hundred pounds of MAPD supplied to each of the follow- ing: Aerojet, Hercules, Bermite Rocketdyne	100K	120K	2	2	Various com- mercial firms under contract to Army, Navy and Air Force
NAVORDSTA (Indian head)	Energy	Extrude propellant for basic AWS project con- tractor	Expertise in extrusion and propellant pro- cessing; unique facilities and knowledge	Provided propellant charges to meet specifications and schedule	66K	250K	2	5	Teledyne- McCormick Selph Company under Navy contract
NAVORDSTA (Indian Head)	Energy	Gas generator grains for various missile G&C	Expertise in process- ing ammonium nitrate- based gas generants and inhibitors	Assisted two firms to qualify as producers	20K	0	1	0	Olin Corpora- tion; Teledyne- McCormick Selph

5-75

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL ORDNANCE STATION (INDIAN HEAD)  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVORDSTA (Indian Head)	Energy	Harpoon missile jet engine starter gas gen. grains	Expertise in ammonium nitrate-based gas generants and pro- cessing	Supplied grains to Teledyne- McCormick for contract to McDonnell	177K	0	3	0	Teledyne- McCormick Selph
NAVORDSTA (Indian Head)	Energy	Liquid propellant for torpedoes and guns	Expertise in liquid monopropellants	Supplied Otto Fuel II to three companies and performed analy- tical services for one	10K 2.3K 0.2K	0	0	0	Sundstrand Aviation, TRW Systems, General Electric
NAVORDSTA (Indian Head)	Fire and Safety	Supply custom extruded propellants	Expertise in proces- sing extruded pro- pellants	Fulfilled all requests on schedule and within budget	15K	15K	.5	.5	Holex, Inc., Eagle-Picher Company, MB Associates
NAVORDSTA (Indian Head)	Trans- portation	Passive restraint systems for vehicles	Expertise in non-toxic smokeless propellants for safety bag infla- tion	Responded to industry requests for data	None	Unknown	0	0	Ford Motor Company, Allied Chemical Corp., Rocket Research Corp., Thiokol Corp.
				5-76					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL ORDNANCE STATION (INDIAN HEAD)  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVORDSTA (Indian Head)	Miscellaneous	Improved booster for Terrier missile (SM-2)	Expertise in refurbishing used missile hardware in extensive rework programs	Supplied once-fired chambers to Aerojet, Hercules, Rocketdyne and Thiokol for demonstration firings	34K	180K	1	4	Firms cited
NAVORDSTA (Indian Head)	Miscellaneous	Supply HBNQ to industrial contractors	Expertise in converting needle-form nitroguanidine to more processible form	Supplied contractual needs of Aerojet, Hercules and Atlantic Research Corp. for HBNQ in Std. ARM, Tartar, Hawk and MK 56 Std. missiles	1300K	1400K	5	5	Aerojet, Hercules, and Atlantic Research
NAVORDSTA (Indian Head)	Miscellaneous (Ordnance)	Computer-Aided Design-Propellant Actuated Device (CAD-PAD)	Expertise in cartridge and propellant actuated device RDT&E and pilot production	Supplied requests for CAD-PAD items not available from industry sources	500K	550K	10	10	Various firms working on DOD contracts; some small businesses
TOTAL					2474.5K <sup>1</sup>	2815K <sup>2</sup>	29.5 <sup>3</sup>	32.5 <sup>4</sup>	
					<sup>1</sup> includes 250K, DOD				
					<sup>2</sup> includes 300K, DOD				
					<sup>3</sup> includes 5, DOD				
					<sup>4</sup> includes 6, DOD				
					5-77				

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL ORDNANCE STATION (LOUISVILLE)  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVORDSTA (Louisville)	Miscellaneous (Develop pro- duction pro- cess to apply R&D outcomes)	REVMAT (Re-entry Materials) PROGRAM 1. Metal Matrix Com- posites 2. Carbon-Carbon 3. Bulk Graphite Develop production process for the use, initially, of three of the five firms in the private sec- tor that performed the R&D on these materials (aluminum- graphite composite the first) (Report MT-044 April 1977 "Metal Matrix Composites")	Development of production process and equipment for manufacture of this product	Program is in Phase II: target 2000 lbs/year	Is now on a complete project basis				NAVSEA
					0	0	0	0	
				TOTAL	0	0	0	0	
				5-78					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL POSTGRADUATE SCHOOL  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Naval Post-graduate School	Environment	A study of air pollution in the Los Angeles air basin was conducted aboard the RV/Acania. Studies were conducted on power plant plumes, tanker transfer operations, drilling platforms, and parameterization of the ARB pollution model.	Shipboard 4-level meteorology station including equipment for measuring turbulence and inversion heights	A two week cruise has been successfully completed. Basic data has been forwarded to all participating agencies and calculation of parameters is underway.	29K	0	.5	0	California Air Resource Board
Naval Post-graduate School	Marine Technology	Determination of melting relationships on ice being towed in sea water	Naval engineering, oceanography	Initial experiments conducted	12K	0	0	0	ONR
TOTAL					41K <sup>1</sup>	0	.5	0	
					<sup>1</sup> includes 12K, DOD				
5-79									

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL RESEARCH LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NRL	Analysis and Testing	Low frequency calibration of oil company hydrophone: Shell Development Co. Model AUB hydro. FFVS in freq. range 2 to 500 Hz at temp. 220 C and at hydrostatic pressures to 1500 kPa	Low frequency calibration facility	CR No. 4331; 23 Mar 1977	.28K	0	0	0	Shell Development Company
NRL	Analysis and Testing	Low frequency calibration of oil company hydrophone: Shell Development Co. single element and 4 element hydros	Low frequency calibration facility	Preliminary data	.85K	0	0	0	Shell Development Company
NRL	Analysis and Testing	Low frequency calibration of oil company hydrophone: Mark Products, Inc., hydrophone Model P40 and Model HRS-1	Low frequency calibration facility	CR No. 4412; 31 Aug 1977	1.5K	0	0	0	Mark Products, Inc.
				5-80					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL RESEARCH LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NRL	Analysis and Testing	Low frequency calibration of oil company hydrophone: Houston Products and Services, Inc. hydrophones Model WM1-018; Model WM2-036; and WM2-044. FFVS in freq. range 10 to 100 Hz at temp. 22° C and at hydrostatic pressures to 345 kPa	Low frequency calibration facility	CR No. 4390; 18 July 1977	.35K	0	0	0	Houston Products and Services, Inc.
NRL	Communications	Implement use of scalar superconductive magnetometers on mobile platforms	Antennas, signal processing, minimize noise output	Various arrangements of magnetometers into arrays are being examined.	70K	40K	1.0	.5	Applied Physics Lab., Johns Hopkins University
NRL	Communications	Various industries taught how to grow high purity compound semiconductors	Extremely high purity GaAs semiconductor crystal growth	10 <sup>8</sup> ohm-cm material without chromium compensation and low dislocations  5-81	100K	0	2.0	0	ONR



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL RESEARCH LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NRL	Communications	LF/VLF communication coverage analysis	LF/VLF communications coverage predictions	LF/VLF coverage predictions have been prepared as requested	140K	125K	2.0	2.0	DCA
NRL	Communications	Sensor arrays for remote viewing (TV pick-up)	Remote imaging	Analyzed defects in silicon sensor arrays (charge coupled devices)	10K	10K	.2	.2	DARPA
NRL	Energy	Obtain data to assess current neutron embrittlement prediction procedures	Irradiation, fracture analysis	Selected irradiation facility; fabricated specimens; determined preirradiation mechanical properties of specimens	275K	350K	2.1	2.8	Electric Power Research Institute

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL RESEARCH LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NRL	Energy	Develop and test device to heat plasma in controlled fusion reactor at MIT	Radar	First version of electrical and mechanical design completed and in review process before construction begins	60K	250K	1.0	2.0	ERDA
NRL	Energy	Provide technical assistance on description of nuclear environment of reactor pressure vessel and its influence on projected radiation damage	Computer methods; neutron transport theory; neutron dosimetry	Calculations of neutron environment in specific reactors have been made; consulted on neutron dosimetry calculations and measurements	35K	75K	.5	1.0	Nuclear Regulatory Commission
NRL	Energy	Assure structural integrity of water reactor pressure boundary components	Advanced materials evaluation and criteria and procedures for failure prevention	Demonstration of improved resistance of steel to fracture by warm prestress application, evaluation of procedures for alleviating radiation damage, and clarification of response to cyclic fatigue stresses	817K	775K	6.0	7.0	Nuclear Regulatory Commission

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL RESEARCH LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NRL	Energy	Neutron effects on structural materials; development of advanced structural materials for nuclear reactors	Materials evaluation and improvements in metallurgical technology	Improved material candidates for advanced systems and clarification of mechanical performance response to nuclear environment	250K	360K	3.5	4.0	ERDA
NRL	Energy	Jet fuel composition	Gas chromatography	Completed analysis of eight (8) experimental jet fuels	4K	0	.1	0	NASA
NRL	Environment	Develop personal atmosphere sampler	Enclosed atmospheric sampling	Sampler developed, lab tested, field evaluated	46K	0	.6	0	NIOSH
NRL	Environment	Instrument for sulfur valence measurement	X-ray spectrochemical analysis	Instrument to be delivered to EPA in October 1977	10K	0	.1	0	EPA
NRL	Environment	Portable spectrometer	X-ray spectrochemical analysis	Instrument to be delivered to EPA in October 1977	11K	0	.1	0	EPA
NRL	Environment	Technique for water pollution analysis	X-ray spectrochemical analysis	Final report due by December 1977 5-84	40K	20K	.7	.3	EPA

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL RESEARCH LABORATORY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NRL	Environment	Asbestos detection	X-ray diffraction	Instrument in design stage	15K	7K	.2	.1	EPA
NRL	Fire and Safety	Oil tanker hazards	Flammability and ignition	Defined ignition hazards in crude oil tankers	15K	0	.2	0	USCG
NRL	Fire and Safety	Develop a new agent for magnesium fires	Fire suppression	Glass frits (ceramic) have been used to extinguish magnesium fires.	79K	0	1.0	0	USAF
NRL	Health and Medicine	Produce and charac- terize cyclotron beam for neutron cancer therapy	Cyclotron operation, neutron dosimetry, radiation technology and computer tech- nology for dose distributions	A reliable neutron beam has been developed and character- ized and is now being used routinely for neutron cancer therapy.	415K	450K	3.6	3.4	National Cancer Institute
NRL	Health and Medicine	Calculate flux-to- dose conversion for high energy neutrons in tissue	Computer technology, nuclear reaction models	Conversion has been calculated for hydrogen; computer codes for models have been imple- mented.	107K	100K	1.5	1.5	National Cancer Institute
TOTAL					2502K <sup>1</sup>	2562K <sup>2</sup>	26.4 <sup>3</sup>	24.8 <sup>4</sup>	
					<sup>1</sup> includes 329K, DOD				
					<sup>2</sup> includes 135K, DOD				
					<sup>3</sup> includes 5.2, DOD				
					<sup>4</sup> includes 2.2, DOD				
5-85									

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SEA SYSTEMS COMMAND  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVSEA- United Tech- nologies Power Systems Division	Energy	Hydrogen-oxygen fuel cells power generation where atmospheric oxygen is not available	Powering deep sea submersibles with ruggedized fuel cells modified from NASA/Apollo spacecraft	Ongoing test of fuel cell powered submersible; NASA has incorporated Navy's design changes into the fuel cells purchased for Space Shuttle application.	600K	0	10	0	NASA, NAVSEA
					TOTAL				
					600K	0	10	0	

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SURFACE WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NSWC	Analysis and Testing	*Investigate detona- tion propagation failure in Atlas- Centaur structural separation system	Explosives (detonating- cord) technology	Problem analyzed and final report submitted; sponsor adopted recommendations and eliminated failures	3k	0	.1	0	NASA (Lewis Res. Center)
NSWC	Analysis and Testing	*HNS (hexanitrostil- bene) explosive evaluation	Explosives (detonating- cord) technology	The performance limits of HMS detonating cords are being studied. A procurement speci- fication is being developed.	115k	52k	1.5	.9	NASA (LBJ Space Center)
NSWC	Analysis and Testing	Magnetic compensation of satellites and calibration of on- board magnetometers	Magnetic measurement and compensation technology	Various magnetic measurements, calibrations, analyses, and compensations have been per- formed on satellite vehicles and their (payload) magneto- meters.	4k	5k	.1	.1	Johns Hopkins University (Applied Physics Lab.)
NSWC	Analysis and Testing	*Electric battery failure analysis	Electric battery technology	Final report (with conclu- sions and recommendations) submitted to sponsor  5-87	4k	0	.1	0	USCG

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SURFACE WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NSWC	Analysis and Testing	Furnish computer ser- vices	Computer technology and facilities	Computer services extended to several other Federal agencies (and private companies under contract to Federal agencies)	100K	100K	0	0	Various Federal agencies and contractors, e.g., Arctec, ORI, Boeing, etc.
NSWC	Analysis and Testing	Furnish computer ser- vices	Computer technology and facilities	Computer services extended to several other Federal agencies (and private companies under contract to Federal agencies)	100K	100K	0	0	Various Federal agencies and contractors, e.g., Harry Diamond Labs and the Air Force Data Service Center
NSWC	Analysis and Testing	*Analysis of propaga- tion failure in DIPAM flexible linear shaped charge in F-111 air- craft module escape system	Explosives (detona- ting-cord) tech- nology	Problem analyzed and final report submitted. (Recommen- dations to be implemented by sponsor.)	15K	0	.3	0	USAF
NSWC	Communications	Receiver to determine satellite range (to within 10 meters)	Electronic design (communication receiver technology); microprocessor deve- lopment	15 production units have been fabricated and are being in- stalled in the field  5-88	76K	50K	1.0	.4	NASA

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SURFACE WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NSWC	Environment	Design and fabrication of a mobile electrostatic precipitator	Mobile test vans and particulate technology	Mobile electrostatic precipitator released to EPA; operated successfully on three industrial pollution sources	337K	15K	3.0	0.25	EPA
NSWC	Fire and Safety	Develop standards for packaging hazardous materials	Packaging design and evaluation	Completed report and specifications on drums and pails; test requirements for carboys and bags completed	44K	23K	1.0	0.5	DOT (Office of Hazardous Materials)
NSWC	Fire and Safety	Consult on nuclear reactor safety problems	Shock wave propagation; safety engineering; design review and analysis with respect to containment capability	Consultation and design reviews continuing	100K	40K	1.6	0.5	Nuclear Regulatory Commission

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SURFACE WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NSWC	Fire and Safety	*Analyze the response characteristics of HLLW (High Level Liquid Waste) tank vaults to internal and external explosions	Shock wave propagation; safety engineering; response of structures to dynamic and explosive type loadings	Analysis in progress	50K	0	.8	0	Nuclear Regulatory Commission
	Health and Medicine	Develop improved orthopedic implant devices using NITINOL	Materials science and metallurgy	A prototype hip joining prosthesis has been fabricated. Preliminary tests were highly successful.	24K	24K	.3	.3	Army Medical R&D Command
	Instrumenta- tion	Design and build sensors for magnetic field measurements in space	Magnetometry; magnetic sensor technology	Ten low noise sensors have been delivered for evaluation. Studies of the low noise properties of various materials are underway.	25K	5K	.5	.1	NASA (Goddard Space Flight Center)
				5-90					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SURFACE WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NSWC	Instrumentation	Develop explosively actuated separation system for Space Shuttle	Explosives engineering	Prototype hardware has been fabricated; plate severance tests are underway.	32K	15K	.3	.1	NASA (LBJ Space Center)
		Space Shuttle command destruct system	Explosives engineering	Report completed on design analysis of the existing system. The break-up model for the solid rocket booster, external tank, and orbiter has been completed. A report is in preparation.	166.5K	0	3.0	0	NASA (Geo. C. Marshall Space Flight Center)
NSWC	Transportation	Install a system for remotely monitoring the passing of vessels in a ship channel	Magnetic sensing; telemetry	System designed, fabricated and tested in the field. Prototype installation to be made in the St. Mary's River near Sault Ste Marie, MI.	47.2K	5K	.5	.1	USCG
				5-91					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL SURFACE WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NSWC	Transportation	Wheel-bearing temperature and derailment sensors with automatic air brake actuator	Weapon fuzing, sensors, explosive actuators, special materials (NITINOL), communications links	Prototype testing is continuing. A new sensor is being developed to monitor roller bearings in addition to the journal bearing previously considered. Tests of this sensor will be conducted early in 1978.	268K	142K	4.3	1.5	DOT (Federal Railroad Administration)
					140K	44K	2.0	.4	DOT (Federal Highway Administration)
NSWC	Transportation	Design and build self-powered detector for traffic counting and control	Magnetometry; magnetic sensor technology	An engineering prototype has been designed, fabricated, and tested. All specifications have been met except operation at extreme temperatures. A design change to correct this is being made. Construction of 20 units will begin early in 1978.	TOTAL				
					1650.7K	1620K	20.4 <sup>3</sup>	5.15 <sup>4</sup>	
					1. includes 39K, DOD				
					2. includes 24K, DOD				
					3. includes .6, DOD				
					4. includes .3, DOD				
				5-92					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Analysis and Testing	*Analyze cause of failure of surface coating applied to cement	Material science	Samples have been analyzed and preliminary findings reported.	0	0	0	0	Town of Brattleboro, VT
NUSC	Communica- tions	*Planning and implementation of a telecommunication system for Eastern Connecticut	System engineering	Project has been initiated.	4K	9K	.1	.3	Town of Old Saybrook, CT
NUSC	Communica- tions	Modify two Nike Hercules Radar Tracking Systems for space positioning of experimental aircraft	Range tracking techniques	Installation at Atlantic City, New Jersey, is almost complete.	177K	0	1.0	0	National Aviation Facilities Experimental Center, FAA/DOT
NUSC	Communica- tions	*Assist town of Waterford in communication systems	System engineering	Technical service and consultation has been provided in designing a disaster warning system and newer communications center. 5-93	1K	2K	.1	.1	Town of Waterford, Connecticut

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Communications	Provide communications consultant service for development of an Emergency Medical System (EMS) plan for South Central Connecticut EMS project	System engineering	The EMS communication system is now operational in South Central Connecticut. Testing and training have been completed.	1K	0	0	0	Yale-New Haven Hospital
NUSC	Communications	Improve and install five Nike Hercules Low Power Acquisition Radar Systems for tracking aircraft	Range tracking techniques	Systems have been installed and modifications are provided as needed.	525K	80K	1.3	.1	Goddard Space Flight Center, NASA, FAA
NUSC	Computer Technology	Provide consultant services for the installation of the NUSC PERT system	Computer science	Programming services have been provided as necessary.	2K	1K	.1	.1	Merck Co., Inc.

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANY YEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Computer Technology	*Development of an interactive program for simulation of the execution of instructions and microinstructions	Computer science and facilities	Program has been made available to Data General Corporation and other users of the Eclipse computer.	0	0	0	0	Data General Corporation (and other users of the Eclipse computer)
NUSC	Computer Technology	Assist in computer analysis of scientific problems and computer modeling	Computer facilities and software operations research	Support services have been provided on a routine basis for various projects.	123K	100K	.3	.3	US Coast Guard R&D Center, DDT
NUSC	Energy	*Provide consultant services for the design and installation of a solar water heater to be used as a demonstration for public education purposes	System engineering	Installation has been completed.	0	0	0	0	Thames Science Center

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Energy	*Provide technical assistance in support of the remote island photovoltaic demonstration project	System engineering	Plans are being made to begin installation at NUSC's Tudor Hill Laboratory in Bermuda.	50K	65K	.3	1.3	ERDA
NUSC	Energy	*Environmental testing of photovoltaic solar cells	Test and evaluation facilities	The first array has been installed at the New London Laboratory for real time environmental testing.	1K	1K	.1	.1	NASA Lewis Research Center
NUSC	Energy	*IPA assignment to assist State of Conn. in developing solar and energy conservation programs	System engineering, computer facilities	Several major solar energy projects have been initiated by the State.	11K	0	.6	0	State of Connecticut Department of Planning and Energy Policy
NUSC	Energy	*IPA assignment to design and implement an automated fuel dispensing system	Management analysis	Study of present system has been completed and cost evaluation is being conducted.	5K	10K	.5	.6	New York City Police Department
				5-96					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Energy	Accelerated testing of solar cells to be used on navigational aids	Environmental testing	Tests have been completed.	1K	0	.1	0	USCG R&D Center, DOT
NUSC	Environment	Assist in the development of a program to optimize snow removal procedures	Operations research, computer science, computer facilities	Simulation program has been completed and data is being collected to test.	0	0	0	0	Connecticut Conference of Municipalities
NUSC	Environment	Assist in the operation of an oil-oil-water test facility designed by NUSC	Marine engineering	The facility is now operational and various oil-on-water sensors are being tested and calibrated on a routine basis	2K	0	.2	0	USCG R&D Center, DOT
NUSC	Environment	Assist in the analysis and solution of problems to preserve the near shore environment	Ocean engineering	Dump sites for dredge spoils have been studied at several locations	109K	142K	2.5	2	U.S. Army Corps of Engineers

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Environment	Assist in planning of deepwater dumpsite investigations	Ocean engineering	Applicable Navy equipment and techniques have been identified and support is being provided.	599K	0	0	0	National Oceanic and Atmospheric Administration; DOC
NUSC	Fire and Safety	Provide cost effective solution to water seepage in municipal buildings	Building maintenance	Recommendations have been made to the city.	0	0	0	0	Newport, R.I.
NUSC	Instrumentation	Provide small craft as required	Facilities instrumentation	Services provided on a continuing basis	16K	7K	.1	.1	Brookhaven National Laboratory, Nuclear Regulatory Commission
NUSC	Instrumentation	Hydrophone calibrations	Facilities	Services have been provided on a routine basis.	1K	0	.1	0	USCG R&D Center, DOT

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Instrumentation	Provide engineering and drafting support for the design of the coastal extension of the jetted cone anchor system	Marine engineering	Design has been completed.	1K	0	.1	0	USCG R&D Center, DOT
		*Provide support for voice privacy system	Communication system engineering	Surveys of need and availability of voice privacy equipment have been completed and recommendations made.	5K	0	.1	0	SEARCH Group, Inc.
NUSC	Law Enforcement	Develop a miniature oceanographic package for use by fishermen	Oceanographic instrumentation	Support services are provided as required.	5K	0	.1	0	National Marine Fisheries Service
		Conduct field measurement study of turbulence and orbital motion velocities	Ocean engineering	Experiments are being conducted in conjunction with the University of Rhode Island.	183K	0	2.6	0	USCG R&D Center, DOT
NUSC	Marine Technology	*IPA assignment to assist in the development of a public works management program	Operations research, management systems, systems engineering	Program in the planning stage	4K	0	.4	0	Rhode Island League of Cities & Towns
				5-99					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL UNDERWATER SYSTEMS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NUSC	Technological Guidance	*IPA assignment to link resource agencies to needs of Connecticut municipalities	System engineering, operations research, management analysis, information systems, testing and evalua- tion, procurement procedures	Technology transfer linkages are being developed and 100 re- quests for assistance from local governments have been handled.	15K	15K	1.0	1.0	New England Innovation Group
NUSC	Technological Guidance	*Serve as a technical backup site for 27 medium size cities of the Urban Technology System	System engineering, operations research, management analysis, information systems, testing and evalua- tion, procurement procedures	Technology transfer linkages are firmly developed as the project moves into its third year. Projects have been completed for ten different cities.	11K	0	.3	0	Public Tech- nology, Inc.
NUSC	Transporta- tion	Adaptation of DOD life-cycle costing techniques to an Urban Mass Transit System	Life cycle costing	Areas of applicability have been identified and the project has been expanded to include implementation plans.	69K	5K	1.0	0.1	Urban Mass Transportation Administration
TOTAL					1921K <sup>1</sup>	437K <sup>2</sup>	13 <sup>3</sup>	6.1 <sup>4</sup>	
					<sup>1</sup> includes 109K, DOD				
					<sup>2</sup> includes 142K, DOD				
					<sup>3</sup> includes 2.5, DOD				
					<sup>4</sup> includes 2, DOD				
					5-100				

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Analysis and Testing	To investigate and calibrate selected ultraviolet optical components for the rocket ozonesonde	Optics	Continuing calibration and documentation	22K	30K	.3	.5	NASA
NWC	Analysis and Testing	Combustion instability investigations re- want to large solid booster motors	Rocket motors	Continuing to investigate instability characteristics	46K	36K	.3	.3	NASA
NWC	Analysis and Testing	Physics of crystalline surfaces	Crystallography	Work was delayed.	0	13K	0	0	NASA
NWC	Analysis and Testing	*LCLM fuze	Missile, radar	Complete	7K	0	0	0	Aeronutronics, Ford
NWC	Analysis and Testing	*To provide support for radiometric sen- sor tests	Aircraft, radar, sensor	Complete	12K	0	0	0	Hughes Air- craft Co.
				5-101					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Analysis and Testing	*Chaparral Wing quali- fication and repro- duction testing	Ranges, lab testing expertise and equipment	Complete	25K	0	0	0	Chaparral Industries
NWC	Analysis and Testing	*F-16 ESS high alti- tude starting tests	High altitude cham- ber	Complete	20K	0	0	0	Solar Divi- sion, Inter- national Harvester
NWC	Analysis and Testing	Sea Chaparral	Missile technology	Delayed	44K	0	.4	0	Philco-Ford Corporation
NWC	Analysis and Testing	*Measure the perform- ance of the hostile weapon location sys- tem	Fire control bombs system	Complete	23K	0	.2	0	Lincoln Lab, Inc.
NWC	Analysis and Testing	*Infrared measurements system	Infrared; detector	Complete	33K	0	0	0	Lincoln Lab, Inc.

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Analysis and Testing	*Trident Aging Studies	Rockets, missiles, propellents	Nondestructive testing continu- ing	12K	24K	.1	.2	Hercules, Inc.
NWC	Analysis and Testing	*Polaris vertical test and evaluation	Rockets, missiles, propellents	Vertical static tests and evaluation continuing	150K	250K	2.0	2.0	Lockheed Missile and Space Corp.
NWC	Energy	Study of energy con- version systems	Conversion systems	Major heat exchanger technology deficiencies were identified.	78K	75K	.9	1.0	ERDA
NWC	Energy	Coso geothermal drill- ing program	Provide support, geology, geophysics	Seventeen (17) heat flow holes have been completed. Work is continuing.	150K	163K	.5	1.0	ERDA
NWC	Energy	*Operation of circum- solar telescope	Atmospheric physics	The telescope gathered data at NWC and was sent to another site, as planned.	13K	0	.2	0	ERDA (Lawrence Berkeley Laboratory)
NWC	Energy	Inventory of geothermal potential at Air Force Bases	Geology	Inventory is continuing 5-103	15K	25K	.2	.4	Air Force Engineering Center

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Energy	Photovoltaic array concept evaluation	Supplied site and technical support	Complete	75K	0	.6	0	U.S. Army Mobility Equipment Command
NWC	Energy	Conversion of solid waste to polymer gaso- line	Chemical engineer- ing	Pyrolysis experiments con- tinuing	163K	138K	1.6	2.0	National Environmental Research Center
NWC	Energy	Use solar energy refle- tor to generate steam for a power source	Supplied site loca- tion for testing reflectors and technical support	Complete	95K	0	0	0	McDonnell Douglas Co.
NWC	Environment	Night fishing	Provide resource test site	Four (4) holes have been drilled.	12K	0	0	0	ERDA (Lawrence Livermore Laboratory)
NWC	Environment	NOAA Pyrotechnic/Dis- penser Development Program	Meteorology; atmos- pheric physics	All five (5) dispensers have been fabricated and are being tested. 5-104	418K	683K	.7	.8	Department of Commerce

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Environment	Pyrotechnic generation of inorganic fumes	Meteorology; atmospheric physics	Generator design chosen and aerosol characterization started	60K	60K	1.0	.9	National Environmental Research Center
NWC	Environment	San Bernardino snow pack augmentation	Meteorology; atmospheric physics	Instrumentation was installed and personnel were trained.	7K	16K	.1	.2	San Bernardino Water District
NWC	Environment	Santa Clara rain augmentation	Meteorology; atmospheric physics	Instrumentation was installed and personnel were trained.	7K	16K	.1	.2	Santa Clara Water District
NWC	Environment	Air quality monitoring	Meteorology; atmospheric physics	Continuous air quality monitoring	UNFUNDED		0	0	San Bernardino Desert Air Pollution Control District
NWC	Environment	Air quality monitoring	Meteorology; atmospheric physics	Continuous air quality monitoring 5-105	UNFUNDED		0	0	Kern County Air Pollution Control District



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Fire and Safety	747 SCA Emergency Crew Escape System	Ordnance, aircraft	All testing completed. Final system has been in- stalled in the 747 aircraft.	24K	0	.1	0	NASA
NWC	Fire and Safety	To determine the safety and handling of the new industrial version of the fire line	Ordnance	Complete	7K	0	.1	0	U.S. Forest Service
NWC	Fire and Safety	Fuel studies	Fuels, aircraft	Complete	20K	0	.2	0	FAA
NWC	Fire and Safety	Vapor Cloud Explo- sion Study	Explosive, safety engineering	Tests on different vapors are continuing	393K	500K	2.0	2.4	USCG
NWC	Fire and Safety	Held icing tests	Aircraft	Complete	10K	0	.1	0	U.S. Army Air Mobility R&D Lab
NWC	Instrumenta- tion	Avalanche control	Ordnance	Complete	15K	0	.1	0	U.S. Forest Service
				5-106					

## SECTION 5

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TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVAL WEAPONS CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NWC	Instrumenta- tion	*To provide pyrotech- nic materials in sup- port of the high energy propellant safety program	Rocket motors	Complete	9K	0	0	0	ERDA (Lawrence Livermore Laboratory)
NWC	Instrumenta- tion	Tri-Fast signal con- ditioning	Telemetry, missiles	Complete	21K	0	.4	0	Motorola, Inc.
NWC	Instrumenta- tion	*CADM Submunitions Program	Equipment and support	Complete	51K	0	.1	0	Aerojet Ordnance Mfg. Co.
NWC	Technological Guidance	*Operation of the Federal Laboratory Consortium for Technology Transfer	Administration management	Continuing coordination of the Consortium	39K	90K	.4	.6	NSF
TOTAL					2076K <sup>1</sup>	2119K <sup>2</sup>	12.7 <sup>3</sup>	12.5 <sup>4</sup>	
					<sup>1</sup> includes 100K, DOD				
					<sup>2</sup> includes 25K, DOD				
					<sup>3</sup> includes .9, DOD				
					<sup>4</sup> includes .4, DOD				
					5-107				

## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVY CLOTHING AND TEXTILE RESEARCH FACILITY LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Navy Clothing and Textile Research Facility	Fire and Safety	Develop handwear, hood and boots to protect crash-rescue fire-fighters from extreme heat stress	Materials and coating technology and design engineering	Glove and hood were developed and sample gloves procured. Facepiece coating studies were completed; boots were tested and found superior to standard boot.	85K	0	1.5	0	Air Force Civil Engineering Center
		TOTAL			85K <sup>1</sup>	0	1.5 <sup>2</sup>	0	
					<sup>1</sup> includes 85K, DOD				
					<sup>2</sup> includes 1.5, DOD				

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Navy Personnel Research and Development Center	Technological Guidance	A Science Advisor for the city and county of San Diego Technology Action Center (SANDTAC) was needed to carry on the local government technology transfer program.	An Intergovernmental Personnel Agreement was used to detail a scientist from NPRDC to serve as Science Advisor.	The San Diego Technology Action Center (SANDTAC) is very effectively carrying out a strong and expanding technology transfer program directly responsive to city and county operational problems.	27K	29K	1	1	NSF, City of San Diego, County of San Diego
	Miscellaneous (Productivity)	The city of San Diego was recently awarded a HUD grant to conduct an analysis to determine different methods of increasing organizational effectiveness, raising productivity, and enhancing job satisfaction.	Organizational development, personnel performance, productivity measurement technology	Advice and consultation given; incorporated in project design	UNFUNDED		1	1	City of San Diego

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVY PERSONNEL RESEARCH AND DEVELOPMENT CENTER LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
Navy Personnel Research and Development Center	Miscellaneous (Behavioral Science)	During the course of a FY both the city and county of San Diego have raised questions relating to NPRDC program areas and in which they have need for technical data and information.	Behavioral science technology	Answers, data, information and other responses have been provided on a continuing basis.	UNFUNDED		.2	.2	City of San Diego; County of San Diego
				TOTAL	27K	29K	1.3	1.3	

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE NAVY PHOTOGRAPHIC CENTER  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
NAVPHOTOCEN	Environment	Assist in the development of National Standards of photography used by the private sector and government	Photography; chemical analysis; processing; pollution control; optics; mechanics; chemistry	Participated in the development of National Standards dealing with photography now used by government and industry; prepared draft standards on photographic sensitometry, optics, and methods for identification and measurement of water pollution from photo wastes	UNFUNDED		.5	.5	American National Standards Institute
NAVPHOTOCEN	Fire and Safety	Photograph and map through heavily silted water the cement floor of locks and dam. Record cracks and corrosion with precise location.	Underwater photographic, photogrammetry, photo optics	A photo mosaic map was made of the bottom of the dam and locks. Damage caused by corrosion was recorded by equipment designed, fabricated and operated by Navy personnel.	28K	0	1.5	0	U.S. Army Corps of Engineers
				TOTAL	28K <sup>1</sup>	0	2 <sup>2</sup>	.5	
					<sup>1</sup> includes 28K, DOD				
					<sup>2</sup> includes 1.5, DOD				
				5-111					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE OFFICE OF NAVAL RESEARCH  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
ONR	Communications	Develop correlations between VHF/UHF radio noise and corona emission from lightning protective array and antenna mast as a function of lateral and vertical distribution, geometry of corona emission elements and atmospheric pressure and wind	Sensing devices for electric fields and electric field charges (lightning warning systems) and computer processing of wave forms	Data generated is presented in such a form that it is applicable for design purposes for new installations and modification of existing arrays.	30K	60K	.5	.10	FAA
ONR	Communications	Monolithic integrated bi-phase shift key MODENS	Transferred Electron Logic Devices (TELDS)	Developed, demonstrated and published techniques for monolithic integrated circuits operating up to 10 GHz - ten times higher than previous technology	98K	170K	1.5	2.2	ONR
ONR	Computer Technology	Hands-on simulator and trainer for electronics maintenance training	Instructional technology and computer technology	Simulators using computer-assisted instruction have been constructed for a variety of electronic communication equipment; try-out in a Naval training setting (Fleet Communications Training) is in progress.	75K	100K	1.5	2.0	DARPA ONR
					75K	100K	1.5	2.0	
				5-112					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE OFFICE OF NAVAL RESEARCH  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
ONR	Energy	Assess impact of Presidential energy initiatives on U.S. household energy conservation behavior	Bayesian inference techniques involving subjective probability assessment - based on decision theory concepts	Estimates have been furnished of the energy conservation measures, including use of solar energy, anticipated as a result of alternative policies, such as tax incentives.	58K	0	1.0	0	Federal Energy Administration
	Energy	To develop simple, effective means of removing scale from industrial boiler tubes to enhance heat transfer and promote fuel conservation	Knowledge of cavitation erosion damage and erosive capabilities of a cavitating water jet derived from ONR sponsored research	Early results indicate that cavitating water jet can be quite effective in descaling boiler tubes.	84K	180K (Tentative)	1.5	2.0 (Tentative)	ERDA (Conservation Division)

5-113



## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE OFFICE OF NAVAL RESEARCH  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
ONR	Environment	The project will breadboard and test the feasibility of previously developed design of a hybrid optical digital pattern recognition system for use as a drop disdrometer. The disdrometer with its computer program and microprocessor is to give a histogram of the size distribution of a population of droplets with a single observation.	Laser sensing devices combined with holographic filters and computer processing	Breadboard model in final stage of fabrication; test program being formulated.	25K	25K	.4	.4	NASA
ONR	Instrumentation	A short term attitude reference system is needed for the Space Shuttle		Navy funded fiber-optics gyroscope technology has been identified as applicable.	30K	100K	.5	1.5	NASA
				5-114					

## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE OFFICE OF NAVAL RESEARCH  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
ONR	Marine Technology	Experimental investigation to explore both the fundamental nature of wave refraction by surface currents and the applicability of a grid-generated wake to provide local wave attenuation in the open sea	Knowledge of wave energy dissipation and interaction between gravity waves and finite turbulent flow fields derived from ONR Code 438 sponsored research	Program has just been started	25K	0	.5	0	U.S. Geological Survey
					50K	50K	1.0	1.0	
					100K	0	2.0	0	
ONR	Transportation	Remote tracking of Arctic pack ice on the continental shelf	Remote buoy technology	Remote unmanned air droppable buoy with satellite data link communications demonstrated	50K	50K	1.0	1.0	Shipping and oil industry
ONR	Transportation	To explore application of gas lubricated foil bearings to the new Chrysler automotive gas turbine engines	Fundamental Gas Lubricated Bearing Technology evolved under ONR sponsored research programs	New designs of gas lubricated foil bearings have been produced and prototype bearings performance is being evaluated in gas turbine engines on test.	650K <sup>1</sup>	785K <sup>2</sup>	11.9 <sup>3</sup>	11.2 <sup>4</sup>	ERDA
TOTAL									
					1 includes 248K, DOD				
					2 includes 370K, DOD				
					3 includes 4.5, DOD				
					4 includes 6.2, DOD				
5-115									

## FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE OFFICE OF NAVAL RESEARCH (CHICAGO)  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FV 78	FV 77	FV 78	
ONR (Chicago)	Analysis and Testing	Analysis of infrared technology data and preparation of state-of-the-art reports	Infrared and electro-optical physics and technology	Ongoing year-round work	350K	0	8.0	0	Defense Logistics Agency; The DARPA; The Three Services Industry
ONR (Chicago)	Miscellaneous (Handbook)	Preparation of Infrared Technology Handbook	Infrared physics and technology	Manuscript being readied for publication	200K	0	4.0	0	Defense Logistics Agency
				TOTAL	550K <sup>1</sup>	0	12 <sup>2</sup>	0	
					<sup>1</sup> Includes 550K, 000				
					<sup>2</sup> Includes 12, 000				

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## SECTION 5

FY 1977

TECHNOLOGY TRANSFER PROJECTS PERFORMED BY THE U.S. NAVAL ACADEMY  
LISTED BY TECHNOLOGICAL AREA

PERFORMING ACTIVITY	TECHNOLOGICAL AREA	PROJECT DESCRIPTION	NAVY TECHNOLOGY APPLIED	PROGRESS	FUNDING		MANYEARS		SPONSOR
					FY 77	FY 78	FY 77	FY 78	
U.S. Naval Academy	Energy	Heat Balanced Engine, EPA-farmer conversion of standard Army engine to run on farm produced alcohol	New field of heat balanced engines	Four demonstration engines converted for national exhibition	25K	0	1	0	EPA
U.S. Naval Academy	Energy	Program management and guidance for Wave Energy Conversion R&D Programs	R&D management techniques, ocean engineering technology	Provided assistance in program planning and technical assessment of systems	62K	0	1.1	0	ERDA
U.S. Naval Academy	Energy	Heat balanced engine design for general aviation	New field of heat balanced engines	Design complete; fabrication by industry commenced	UNFUNDED		.08	0	Avco-Lycoming
U.S. Naval Academy	Energy	Wave activated turbine generators	Computer technology, theoretical analysis	Theoretical equations developed; apparatus and tests designed	12K	8K	.2	.2	USCG
				TOTAL	99K	8K	2.38	.2	
				5-117					

SECTION 6

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## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Analysis & Testing	NRL	Navy Case No. 58,432	Production of acetylene	Useful in welding process Useful in plastics industry for the manufacture of plastics
Analysis & Testing	NRL	Navy Case No. 60,747	A new class of high surface-energy material	Coatings Paints
Analysis & Testing	NRL	Navy Case No. 60,756	A new class of high-temperature material	Composite matrix material High voltage insulating material High temperature adhesive High temperature coating
Analysis & Testing	NRL	Navy Case No. 60,757	A new class of high-temperature material	Composite matrix material High voltage insulating material High temperature adhesive High temperature coating
Analysis & Testing	NRL	Patent No. 3,993,631	A new class of high-temperature material	Composite matrix material High voltage insulating material High temperature adhesive High temperature coating
Analysis & Testing	NRL	Patent No. 4,028,270	Initiate vinyl polymerization reducing agent	Vinyl polymer production

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# SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Analysis & Testing	NOSC	Patent No. 4,028,947	To provide a permanent record of ambient noise	Noise monitoring in factories, industry, etc.
Analysis & Testing	OTNSRDC	Patent No. 4,044,598	Performance evaluation facility for seal skirt-fingers of surface effect ships	Testing and evaluating of skirt materials for air-cushion and surface effect vehicles
Analysis & Testing	NORDA	Navy Case No. 60,515	Acousto-optical device for removing bubble pulse from reflected sonar signal	Clarifying seismograms by removing noise and bubble pulses
Analysis & Testing	NCSL	Navy Case No. 59,565	Magnetometer	Metal detection systems; station magnetometers
Analysis & Testing	NSWC	Navy Case No. 58,007	The invention is a strain gage balance beam. In wind tunnel evaluations of aerodynamic test shapes, a model of the test shape is mounted with the cantilever mounted balance beam being instrumented so as to ensure that aerodynamic axial force and rolling moment measurements are not deleteriously affected by substantial electrical and mechanical interaction.	Major use is as a strain gage balance for measuring axial forces and rolling moments imposed on an aerodynamic body under wind tunnel conditions

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Analysis & Testing	NSWC	Navy Case No. 61,481	Single junction, edge-illuminated, photovoltaic cell	High speed detection of electro-magnetic radiation
Analysis & Testing	NSWC	Navy Case No. 57,054	The purpose of this invention is to provide polyphenylquinoxaline coatings which have greater strength and thermal stability than the prior art. Preparation of the prior art polyphenylquinoxaline coatings requires the use of solvents which later must be removed from the coating. Removal of these solvents creates small voids in the coatings which reduce the strength and thermal stability of the coatings. The meltable bifunction quinoxaline monomers of the present invention can be used to produce polyphenylquinoxaline coatings without the use of solvents.	The meltable bifunctional quinoxaline monomers may be used to produce protective coatings and joints which have excellent strengths and thermal stabilities, and which are resistant to moisture. These polyphenylquinoxaline coatings are soluble in common organic solvents, such as chloroform, and thus may be easily removed from the objects which they coat or join.
Analysis & Testing	CEL	Navy Case No. 60,516	Lead in paint indicator gel	Decontamination (methods)
Analysis & Testing	CEL	Patent No. 3,986,636	Hydraulic fluidic level control system	measuring & test instruments (mechanical characteristics)



## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Analysis & Testing	CEL	Patent No. 3,986,115	Transient direction detector	Detection apparatus (electrical)
Analysis & Testing	NOSC	Navy Case 59,465	Photometric method and apparatus for measuring packing fraction of terminated fiber optic cables	Repair of fiber optic transmission lines
Analysis & Testing	NOSC	Patent No. 4,002,230	Critical parameter receiver tester	Radio receiver testing
Communications	NOSC	Patent No. 4,013,966	FM RF signal generator using step recovery diode	Radio equipment testing
Communications	NOSC	Navy Case No. 60,354	Data rate adaptive control device for manchester code decoders	Data processing
Communications	NOSC	Navy Case No. 60,059	Method and means of link coupling with separate control of link reactance and coupling coefficient	Radio communications
Communications	NOSC	Navy Case No. 59,673	Microstrip hybrid ring coupler	Microwave communications
Communications	NOSC	Navy Case No. 60,782	A broadband high pass microwave filter	Microwave communications
Communications	NOSC	Patent No. 4,017,864	Mode launcher for simulated waveguide	Microwave communications and radar
			6-4	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Communications	NTEC	Patent Nos. 3,998,532 (21 Dec 76 - System) and 4,012,126 (15 Mar 77 - Lens)	This projection system will serve to present panoramic scenes, 360° in azimuth, for visual simulation in training devices.	In commercial applications, the projection system could be used for either cinematic slide or presentations for entertainment or education purposes.
Communications	NWC	Patent No. 3,928,108	Formation of preholographic element	Holography
Communications	PMTC	Navy Case No. 58,829	Multiple frequency microstrip antenna assembly	Antenna/telemetry (components)
Communications	PMTC	Navy Case No. 61,412	Microwave cross-over switch	Solid state switching
Communications	PMTC	Navy Case No. 61,413	Microwave isolation switch	Solid state switching
Communications	PMTC	Navy Case No. 61,378	Asymmetrically fed magnetic microstrip dipole antenna	Antenna/telemetry (components)
Communications	PMTC	Navy Case No. 61,379	Offset fed magnetic microstrip dipole antenna	Antenna/telemetry (components)
Communications	PMTC	Navy Case No. 61,380	Coupled fed magnetic microstrip dipole antenna	Antenna/telemetry (components)
Communications	PMTC	Navy Case No. 61,382	Notched/diagonally fed electric microstrip antenna	Antenna/telemetry (components)
			6-5	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Communications	PMTc	Navy Case No. 61,383	Twin electric microstrip dipole antenna	Antenna/telemetry (components)
Communications	PMTc	Navy Case No. 61,384	Electric monomicrostrip dipole antennas	Antenna/telemetry (components)
Communications	PMTc	Navy Case No. 61,385	Circularly polarized electric microstrip antennas	Antenna/telemetry (components)
Communications	PMTc	Navy Case No. 62,167	Dual ground plane microstrip antennas	Antenna/telemetry (components)
Communications	PMTc	Patent No. 4,007,691	Smoke marker	Markers (locators)
Communications	PMTc	Patent No. 3,978,487	Coupled microstrip dipole antenna	Antenna/telemetry (components)
Communications	PMTc	Patent No. 3,984,834	Diagonally fed microstrip	Antenna/telemetry (components)
Communications	PMTc	Patent No. 3,996,551	Method of fabrication of chromium silicon oxide thin	Printed and modular circuits
Communications	PMTc	Patent No. 4,031,488	Multiple polarization switch	Switches (solid state switching)
Communications	PMTc	Patent No. 4,017,687	Interchannel crosstalk elimination for a time division multiplexer	Telemetry (electrical circuits)
				6-6

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Communications	PMTc	Patent No. 4,040,060	Notch fed magnetic microstrip dipole antenna	Antenna/telemetry (components)
Communications	NOSC	Navy Case No. 58,956	Integrated optical matrix multiplier	Matrix-vector signal processing
Communications	NOSC	Patent No. 4,010,474	Two dimensional array antenna	Two dimensional radar antenna for small water craft
Communications	NOSC	Patent No. 4,023,117	A stimulated raman scattering resonator	Laser communications
Communications	NRL	Navy Case No. 61,738	To increase emissive capacity of thermionic cathodes	All electronic equipment utilizing electron-emission tubes or guns, especially high-power tubes or guns
Computer Technology	NOSC	Patent No. 4,006,412	Digital display system circuit	Digital instrument read-out
Computer Technology	NOSC	Navy Case No. 59,323	To graphically represent digitally encoded characters	Can be used with a strip chart recorder to print alphanumeric characters
Computer Technology	NOSC	Navy Case No. 60,223	Binary apparatus for motion control	Display systems
Computer Technology	NOSC	Patent No. 4,016,547	To compensate for the loss of a storage track	Computer memories
				6-7

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Computer Technology	NO SC	Navy Case No. 60,873	Non-linear analog-to-digital converter	Information processing (abandoned)
Computer Technology	NO SC	Patent No. 4,014,002	Data acquisition and transfer system	Data transmission
Energy	NRL	Navy Case No. 61,907	To quickly cut off high currents	High-power fuses; production of high-power electrical pulses; electrical power companies
Energy	NRL	Patent No. 3,989,475	Device with a super conducting capacity	Electric switching device carrying high current
Energy	NRL	Patent No. 3,996,484	To provide circuit configurations of two or more negative-resistance devices which give additional stable states	Semiconductor devices such as hole storage transistor, tunnel diode, dynatron, transistor, avalanche diode
Energy	NRL	Patent No. 4,002,061	Measurement of bending strains at high temperatures	Useful in the nuclear power devices, electrical generation devices, gas turbine engine manufacture
Energy	NRL	Patent No. 4,002,504	Superconducting wire with increased current capacity	DC motors, AC/DC generators, magnets, magneto hydrodynamic generators, rotating electrical machinery and in power generation, inductive storage devices, pulsed power sources

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Energy	NOSC	Patent No. 4,025,843	Constant current base drive circuit	Regulated power supplies
Energy	NOSC	Patent No. 4,009,420	Solid state power controller	Power supply protection circuits
Energy	NADC	Navy Case No. 58,665	Igniter for fuel oil spray in marine boilers	Commercial boiler ignition systems
Energy	USNA	Navy Case No. 60,743	Control of pressure and temperature in internal combustion engines	All forms of internal combustion engines
Energy	CEL	Navy Case No. 60,446	Electrostatic high potential device	Generators (electrical energy)
Energy	CEL	Navy Case No. 61,083	Parametric energy coupled uninterruptible power supply	Switches
Energy	CEL	Patent No. 3,986,021	Passive solar tracking system for steerable fresnel elements	Solar energy controlled devices
6-9				

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Energy	CEL	Patent No. 3,986,116	Transient source and direction of propagation detector	Detection apparatus (electrical)
Energy	CEL	Patent No. 4,031,444	Solar collector control system	Solar energy controlled devices (systems & subsystems)
Energy	CEL	Patent No. 3,993,577	Method for production of heat and hydrogen gas	Air flow, conditions & circulation control
Energy	CEL	Patent No. 4,017,414	Powered metal source for production of heat and hydrogen gas	Air flow, conditions & circulation control
Energy	NAVSWEASES	Navy Case No. 59,046	Battery electrolyte level indicator	A battery electrolyte level indicator for indicating when the electrolyte of wet cell battery has fallen below a minimum acceptable level
Energy	NAVSWEASES	Navy Case No. 59,499	Quasi-corner reflectors for electromagnetic radiation	Assembly of collapsible quasi-corner reflectors which, when folded and compressed, forms a small, compact and easily deployable device for reflecting electromagnetic radiation
Energy	PMTIC	Patent No. 4,023,859	1 to 18 GHz microwave signal generators	Generators (electrical energy)
			6-10	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Energy	NOSC	Patent No. 4,008,427	Variable input power supply	Versatile input power supply
Energy	NOSC	Patent No. 4,012,089	Molded plastic electronic module package	Electronic component packaging companies
Environment	USNA	Patent No. 4,012,321	Oxidation of refractory organics in aqueous waste streams by hydrogen peroxide and ultra-violet light	Polishing secondary sewage treatment effluents before release into the water shed, especially wet air oxidation
Environment	DTNSRDC	Patent No. 3,977,969	Containment of oil spills	Oil spill clean-up
Environment	NADC	Navy Case No. 59,273	Particulate sampling probe	Environmental instrumentation
6-11				



## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Environment	NRL	Patent No. 3,989,944	Detection of small amounts of asbestos in the air	Useful for the determination of asbestos in manufacturing plants or in any other area
Environment	NRL	Navy Case No. 61,621	Filtration (purification) of air by electrostatic precipitation	Purification of air in factories and homes
Health & Medicine	NHRDC (NAMRL)	Navy Case No. 59,935	A pharmaceutical composition for the prevention of motion sickness which comprises two parts of promethazine hydrochloride and one part of 1-ephedrine sulfate	To provide a new motion sickness preventative
Health & Medicine	ONR-Chicago	Navy Case No. 59,156	Provision of uniform pressure for fluid delivery in a syringe injection	Medical syringe
Instrumentation	NRL	Navy Case No. 61,131	Digital open loop canceller for use in sidelobe cancellers	Interference removal in medical electronic systems (EKG, EEG) etc., pattern recognition systems, learning machine
Instrumentation	NOSC	Navy Case 61,234	A method of manufacturing three dimensional integrated circuits	Electronic component manufacturing
Instrumentation	ONR	Navy Case No. 60,554	Method for making tuned resonance passive electronic filters	Electronic filter manufacturing
			6-12	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Instrumentation	NATC	Patent No. 4,037,046	"Ultra-High pressure vessel electrical pass-through connector" The invention is an electrical connector capable of passing conductors through the wall of a vessel while developing a pressure-tight seal. The device consists of a truncated ductile steel cone containing small-diameter stepped holes into which the electrical conductors are cemented with an epoxy bonding agent on similar cement. The cone seats into a mating conical receptacle in the vessel wall which has an O-ring at the high-pressure side of the cone-receptacle interface	Yes - nothing other than commercial rights vested with inventor by Navy directive
Instrumentation	NSWC	Navy Case No. 60,665	Modern, multi-stage analogue filter circuit	High-pass or low-pass analogue filter exhibiting extremely sharp cutoff
Instrumentation	PMTc	Patent No. 4,039,242	Coaxial wet connector	Connectors
Instrumentation	PMTc	Patent No. 4,046,993	Target/torpedo launch system	Launchers (electrical circuits)
			6-13	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Instrumentation	PMTC	Patent No. 4,031,005	A controllable sorbent broad-caster	Purifiers (systems and subsystems)
Instrumentation	PMTC	Patent No. 3,992,692	Programmable underwater acoustic beacon	Target seeking means (systems and subsystems)
Instrumentation	PMTC	Patent No. 3,992,613	TACAN flying target control system	Remote control and/or indicators (systems and subsystems)
Instrumentation	NOSC	Navy Case No. 59,829	Complex photodichroic spatial filter	Analytic processing of coherent light signals
Instrumentation	NOSC	Navy Case No. 59,686	Fiber optic position sensing & indicating apparatus for electrical interference-sensitive environments	Aircraft sensing system for mechanical components
Marine Technology	NOSC	Patent No. 3,986,220	To provide a protection from sharks	Airlines, ocean-going craft, fishermen
Marine Technology	NOSC	Patent No. 4,005,282	To provide a wrist-worn instrument for indicating safe ascent depth to a diver	For use by all commercial and sports divers
			6-14	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Marine Technology	NOSC	Patent No. 4,015,553	To provide a diver-operated barge which can be controlled by a joystick	Oil industry for constructing submerged structures
Marine Technology	NRL	Navy Case No. 61,370	Seawater cell for use in ocean environment	Off shore oil drillings, scientific instruments, maritime shipping
Marine Technology	NOSC	Navy Case No. 58,981	To provide a sound velocity-depth profile in an ocean body or the like in real time	Oceanographic activities
Marine Technology	NOSC	Navy Case No. 58,982	To provide a sound velocity-depth profile in an ocean body or the like in real time	Oceanographic activities
Marine Technology	DTNSRDC	Patent No. 4,046,094	Anti-fouling system for active ships at rest	Keeping ship hulls clean
Marine Technology	DTNSRDC	Patent No. 3,979,354	Non-polluting anti-fouling composition and method	Protection of submerged objects from marine growth with minimum effect on the environment
Marine Technology	DTNSRDC	Patent No. 3,981,252	Non-polluting disposal of anti-fouling paint residues encountered in shipyard abrasive blasting operation	Maintenance of ships
			6-15	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Marine Technology	NCSL	Patent No. 4,034,416	Diving helmet breech ring connection	Diving helmet to suit connection
Marine Technology	NSWC	Navy Case No. 58,451	Omnidirectional underwater acoustic Doppler transmitter and receiver elements	Intrusion monitor and detector suitable for shallow water (e.g., river, harbor remote deployment)
Marine Technology	NSWC	Navy Case No. 58,731	The invention is a cable brake and lock mechanism ideally adapted to control deployment or payout of mooring lines and cables to moor marine and submarine devices, such as buoys and mines.	Can be used to moor buoys and mines or other underwater objects at a predetermined depth. With small modifications there is a possibility that the device could lock a cable at high altitudes. Possible use in connection with a measuring and testing device for measuring a length of cable as the cable is paid out. With modification a possible use might be in gas-shielded arc welding wherein a spooled wire reel needs a locking device; the brake would need a source of high pressure.

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## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Marine Technology	NSWC	Patent No. 4,004,310	The invention is intended for use in marking the water surface where an object of interest has sunk to enable a rapid recovery operation	Coastal oil drilling operation, salvaging, rescue operations, missile recovery operations, i.e., recovery of test vehicles; with small modifications use in fishing operation in locating clam beds and the like; a plurality could be used as guiding means through mine fields, retriever apparatus, object markers
Marine Technology	CEL	Patent No. 4,007,816	Portable salvage lift apparatus	Oceanographic equipment
Marine Technology	CEL	Navy Case No. 61,356	A device for measuring the velocity of a body in an under-sea environment	Oceanographic equipment
Marine Technology	CEL	Navy Case No. 61,809	Oceanographic sensor with in-situ cleaning and bio-fouling prevention system	Cleaning means (electrical)
Marine Technology	CEL	Patent No. 3,995,480	Thermal sensor for measurement of ocean current direction	Oceanographic equipment
Marine Technology	CEL	Patent No. 3,978,444	Seafloor mapping system	Oceanographic equipment

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## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Transportation	NPTR	Patent No. 3,978,894	To provide an energy-absorbing tear webbing, designed primarily for parachute harnesses	May be employed in any system requiring shock force attenuations, such as cargo slings, seat belts, mountain climbers' equipment, window-washer harnesses, and the like.
Transportation	NPTR	Patent No. 4,022,406	Automatically variable multi-stage parachute (automatically control the inflation time)	Sport parachutists, smoke jumpers
Transportation	ONR	Patent No. 3,958,597	Throttle control for remote air driven devices	Overhead crane control
Transportation	ONR	Navy Case No. 61,059	Apparatus and method for connecting bimetal members by explosive bonding	Manufacture of boat fittings
Transportation	NADC	Navy Case No. 60,971	Inflatable mini boat	Survival or recreation craft
Transportation	NADC	Navy Case No. 59,407	Inflatable mini boat	Survival or recreation craft
Transportation	DTNSRDC	Patent No. 3,977,244	Infrared technique for aerodynamic flow visualization	Aircraft design and model testing
			6-18	

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Transportation	NOSC	Patent No. 4,002,353	Towing vehicle having a cart-hitching mechanism	Industrial assembly plants
Transportation	NAF	Navy Case No. 60,802	Strobe light having reduced electromagnetic radiation	Improvement of strobe lights, of potential benefit to commercial and civil aviation
Transportation	NATC	Navy Case No. 61,769 (no patent award)	"Compressed air-powered hangar doors" - This invention relates to the powering of large aircraft hangar doors and other similar industrial doors with an air-driven motor. The doors are driven by a prime mover (usually one of the door panels) which is used to collect all door panels and push them into the open or closed position. The air motor drives a door panel wheel via drive chains or similar power transmission devices and obtains air via a payout hose connected to the building air supply.	Yes

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NAVY TECHNOLOGY TRANSFER PROGRAM FY 77 SUMMARY STATISTICS. (U)

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FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Transportation	DTNSRDC	Patent No. 3,985,094	Series waterjet propulsion pumps for marine vehicles	Boat and ship propulsion
Transportation	DTNSRDC	Patent No. 3,990,258	Launching means for surface effect ships	Surface effect ships design
Transportation	DTNSRDC	Patent No. 4,029,036	Stabilization and motion alleviation of air-cushion borne vehicles	Air-cushion and surface effect vehicle design
Transportation	NATC	Navy Case No. 61,566	"Helicopter external load pick-up system" - Procedure is to drop out of the helicopter so that it floats on the water and then air taxi, towing the pick-up device over the sea pointer line which will slip through to a knot. The load can then be lifted from the water and delivered aboard ship.	Yes
Transportation	NATC	Patent No. 3,979,803	High capacity, quick release latch	Overhead hoists, airborne slings
Transportation	NRL	Navy Case No. 61,791	An aircraft landing system that provides the pilot a perspective view of a runway on which he intends to land	Landing system for commercial airports

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## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Miscellaneous	NSWC	Navy Case No. 59,108	Vacuum deposition of lead chalcogenide epilayers	Process for production of lead chalcogenide semiconductor devices suitable for assembly line applications
Miscellaneous	NWC	Patent No. 3,976,655	Lasing dye	Lasers
Miscellaneous	NWC	Patent No. 3,976,656	Lasing dye	Lasers
Miscellaneous	CEL	Patent No. 4,016,726	Connector hinge for oil containment booms	Coupling and/or decoupling means (mechanical)
Miscellaneous	NOSC	Navy Case No. 61,700	Gradient index miniature coupling lens and method of fabrication	Manufacture of gradient index miniature lens
Miscellaneous	NOSC	Patent No. 4,025,157	Gradient index miniature coupling lens	Coupling lens in optical systems
Miscellaneous	NOSC	Navy Case No. 60,034	Solder extractor apparatus	Reworking soldered connections on PVC boards, etc.
Miscellaneous	NOSC	Navy Case No. 59,431	Selectively lift, transport, and release loads by a hook which can be operated remotely	Material handling in factories and construction yards
Miscellaneous	NOSC	Navy Case No. 59,459	Retain sloshing water in a tank	Small plastic pools for children

## SECTION 6

FY 1977

## INVENTIONS AND PATENTS

TECHNOLOGICAL AREA	PERFORMING ACTIVITY	INVENTION/PATENT	PURPOSE	POTENTIAL COMMERCIAL APPLICATIONS
Miscellaneous - (Construction)	CEL	Patent No. 4,024,823	Automatic blade angle controlled system	Earth-working equipment level control
Miscellaneous - (Construction)	CEL	Patent No. 3,977,149	Multipurpose construction panel	Structural construction, materials & equipment (equipment sections)
Miscellaneous - (Construction)	NSWC	Patent No. 4,004,000	A decomposable non-polluting pesticide is formed by spraying two relatively stable reactants to form a relatively non-stable toxic pesticide.	The subject item can be used for control of household and industrial pests, such as roaches.
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## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### ANTI-SUBMARINE WARFARE SYSTEMS PROJECT OFFICE

H. Magid (Herbert), ASW-114  
Anti-Submarine Warfare Systems Project Office  
Washington, DC 20362  
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Autovon: 222-9140

### CIVIL ENGINEERING LABORATORY

E.H. Early (Gene), Code L03C  
Civil Engineering Laboratory  
Naval Construction Battalion Center  
Port Hueneme, CA 93043  
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### DAVID W. TAYLOR NAVAL SHIP R&D CENTER

B.V. Nakonechny (Basil), Code 1102.1  
David W. Taylor Naval Ship Research and  
Development Center  
Bethesda, MD 20084  
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Autovon: 287-1681

### GIDEP

W.E. Arnitz (Bill), Director  
Government-Industry Data Exchange Program  
Operations Center  
Fleet Analysis Center-Naval Weapons Station  
Seal Beach, Corona Annex  
Corona, CA 91720  
Phone: 714-736-4677  
Autovon: 933-4677

### MARINE CORPS DEVELOPMENT & EDUCATION COMMAND

J. Druzback (John)  
Technical Adviser, Development Center  
Marine Corps Development and Education Command  
Quantico, VA 22134  
Phone: 703-640-2412  
Autovon: 278-2412

### NATIONAL PARACHUTE TEST RANGE

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National Parachute Test Range  
El Centro, CA 92243  
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Autovon: 958-8607

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## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### NAVAL AEROSPACE MEDICAL RESEARCH LABORATORY

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Naval Aerospace Medical Research Laboratory  
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Autovon: 922-3281

### NAVAL AIR DEVELOPMENT CENTER

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Naval Air Development Center  
Warminster, PA 18974  
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### NAVAL AIR ENGINEERING CENTER

M.A. Palamar (Michael), Code 9011  
Plans and Programs Office  
Naval Air Engineering Center  
Lakehurst, NJ 08733  
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### NAVAL AIR PROPULSION CENTER

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Naval Air Propulsion Center  
Trenton, NJ 08628  
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### NAVAL AIR SYSTEMS COMMAND

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Washington, DC 20361  
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### NAVAL AIR TEST CENTER

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Naval Air Test Center  
Patuxent River, MD 20670  
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### NAVAL AVIONICS CENTER

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Indianapolis, IN 46218  
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NAVY TECHNOLOGY TRANSFER FOCAL POINTS

NAVAL BIOSCIENCES LABORATORY

Lt. W.M. Coleman, III  
Naval Biosciences Laboratory  
Naval Supply Center  
Oakland, CA 94625  
Phone: 415-832-5217  
Autovon: 836-6313

NAVAL BLOOD RESEARCH LABORATORY

Captain C.R. Valeri  
Naval Blood Research Laboratory  
615 Albany Street  
Boston, MA 02118  
Phone: 617-247-6700  
Autovon: 955-8351

NAVAL COASTAL SYSTEMS CENTER

W.H. Williams (Bill)  
Executive Staff, Code 101B  
Naval Coastal Systems Center  
Panama City, FL 32407  
Phone: 904-234-4209  
Autovon: 436-4209

NAVAL DENTAL RESEARCH INSTITUTE

Lt. Cdr. R.J. Lindsay (Richard)  
Naval Dental Research Institute  
Naval Base  
Great Lakes, IL 60088  
Phone: 312-688-5647  
Autovon: 792-5647

NAVAL ELECTRONIC SYSTEMS COMMAND

R.A. Wade (Ron), Code 30421  
Naval Electronic Systems Command  
Department of the Navy  
National Center Building #1  
Washington, DC 20360  
Phone: 202-692-8741  
Autovon: 222-8741

NAVAL ELECTRONIC SYSTEMS ENGINEERING ACTIVITY

P.L. Hopkins, Code 02  
Naval Electronic Systems Engineering  
Activity  
Patuxent River, MD 20670  
Phone: 301-863-3000  
Autovon: 872-5202



# APPENDIX A

## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### NAVAL ENVIRONMENTAL PREDICTION RESEARCH FACILITY

Lt. Cdr. R.E. Englebreton  
Naval Environmental Prediction Research Facility  
Monterey, CA 93940  
Phone: 408-646-2906  
Autovon: 878-2906

### NAVAL EXPLOSIVE ORDNANCE DISPOSAL FACILITY

L.A. Dickinson (Lionel)  
Attn: Code D, Technical Director  
Naval Explosive Ordnance Disposal Facility  
Indian Head, MD 20640  
Phone: 301-743-4439  
Autovon: 364-4330

### NAVAL FACILITIES ENGINEERING COMMAND

B.T. Lewis (Bernie), Code 1053  
Naval Facilities Engineering Command  
(for Public Works Management System)  
200 Stovall Street  
Alexandria, VA 22332  
Phone: 202-325-8196  
Autovon: 221-8196

### NAVAL FACILITIES ENGINEERING COMMAND (Cont'd)

J.T. Rohrer (Tim), Code 031A or  
Cdr. A.A. Arcuni, Code 031  
Naval Facilities Engineering Command  
200 Stovall Street  
Alexandria, VA 22332  
Phone: 202-325-8533  
Autovon: 221-8533

### NAVAL HEALTH RESEARCH CENTER

M. Richlin (Milton), Code 8090  
Naval Health Research Center  
San Diego, CA 92152  
Phone: 714-225-7393  
Autovon: 933-7393

### NAVAL MATERIAL INDUSTRIAL RESOURCES OFFICE

B.S. Safier (Bill), Technical Director, Code 01  
Naval Material Industrial Resources Office  
Philadelphia, PA 19112  
Phone: 215-755-4891  
Autovon: 443-4891

# APPENDIX A

## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### NAVAL MEDICAL RESEARCH & DEVELOPMENT COMMAND

N. Yanowsky (Nicholas), Code 49  
 Naval Medical Research and Development Command  
 National Naval Medical Center  
 Bethesda, MD 20014  
 Phone: 202-295-1771  
 Autovon: 295-1771

### NAVAL MEDICAL RESEARCH INSTITUTE

Cdr. M.L. Fitts (Marvin)  
 Naval Medical Research Institute  
 Bethesda, MD 20014  
 Phone: 301-295-0020  
 Autovon: 295-0020

### NAVAL OBSERVATORY

G. Westerhout (Gart), Science Director, Code 6C  
 U.S. Naval Observatory  
 34th and Massachusetts Avenue, NW  
 Washington, DC 20390  
 Phone: 202-254-4539  
 Autovon: 294-4539

### NAVAL OCEAN RESEARCH & DEVELOPMENT ACTIVITY

R.S. Greenbaum (Russell), Code 125  
 Head, Information Branch & Public Affairs Officer  
 Naval Ocean Research and Development Activity  
 NSTL Station, MS 39529  
 Phone: 601-688-4765  
 Autovon: 485-4765

### NAVAL OCEAN SYSTEMS CENTER

D.H. Courter (Don), Code 013B  
 Naval Ocean Systems Center  
 San Diego, CA 92152  
 Phone: 714-225-7455  
 Autovon: 933-7455

### NAVAL OCEANOGRAPHIC OFFICE

C.D. Griffith (Clayton), Code 011  
 U.S. Naval Oceanographic Office  
 Washington, DC 20373  
 Phone: 202-763-2021  
 Autovon: 293-2021

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## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### NAVAL ORDNANCE STATION (INDIAN HEAD)

A.T. Camp, Code TDT  
Naval Ordnance Station  
Indian Head, MD 20640  
Phone: 301-743-4210  
Autovon: 364-4210 / 4814

### NAVAL ORDNANCE STATION (LOUISVILLE)

F.H. Connell, Code 05  
Station Resources and Planning Department  
Naval Ordnance Station  
Louisville, KY 40214  
Phone: 502-367-5421  
Autovon: 989-5423

### NAVAL POSTGRADUATE SCHOOL

J.W. Creighton (John), Code 55CF  
Naval Postgraduate School  
Monterey, CA 93940  
Phone: 408-646-2048  
Autovon: 878-2048

### NAVAL RESEARCH LABORATORY

E.L. Brancato (Emanuel), Code 4104  
Naval Research Laboratory  
Washington, DC 20375  
Phone: 202-767-3046  
Autovon: 297-3046

### NAVAL SEA SUPPORT CENTER, ATLANTIC

H.K. Shoaf, Code 902  
Naval Sea Support Center, Atlantic  
St. Juliens Creek Annex  
Portsmouth, VA 23702  
Phone: 804-393-7229 / 7262  
Autovon: 961-7229 / 7262

### NAVAL SEA SUPPORT CENTER, PACIFIC

D.A. Maslin (Don), Code 6000  
Naval Sea Support Center, Pacific  
P.O. Box 80548  
San Diego, CA 92138  
Phone: 714-225-4132  
Autovon: 957-4132

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## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### NAVAL SEA SYSTEMS COMMAND

J.H. Huth (John), Code SEA 03C  
 Department of the Navy  
 Naval Sea Systems Command  
 Washington, DC 20362  
 Phone: 202-692-9514  
 Autovon: 222-9514

### NAVAL SHIP WEAPON SYSTEMS ENGINEERING STATION

R.T. Rains (Roger), Code 6000  
 Naval Ship Weapon Systems Engineering Station  
 Port Hueneme, CA 93043  
 Phone: 805-982-4676  
 Autovon: 360-4676

### NAVAL SUBMARINE MEDICAL RESEARCH LABORATORY

C.R. Carey (Charles), Technical Services  
 Director, Code 03  
 Naval Submarine Medical Research Laboratory  
 Groton, CT 06340  
 Phone: 203-449-3266  
 Autovon: 241-3266

### NAVAL SUPPLY SYSTEMS COMMAND

C.E. Emberger (Charles), Code 0431F  
 Naval Supply Systems Command  
 Department of the Navy  
 Washington, DC 20376  
 Phone: 202-697-4432  
 Autovon: 227-4561

### NAVAL SURFACE WEAPONS CENTER

F.J. Gleason (Fred), Code CL  
 Naval Surface Weapons Center  
 White Oak, Silver Spring, MD 20910  
 Phone: 301-394-1505  
 Autovon: 290-1505

### NAVAL TRAINING EQUIPMENT CENTER

F.E. Wolf, Jr. (Franklin), Code N326  
 Naval Training Equipment Center  
 Orlando, FL 32813  
 Phone: 305-646-4493  
 Autovon: 791-4493

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NAVY TECHNOLOGY TRANSFER FOCAL POINTS

NAVAL UNDERWATER SYSTEMS CENTER

J.E. Atkinson (Jim), Code 0702  
Naval Underwater Systems Center  
New London Laboratory  
New London, CT 06320  
Phone: 203-442-0771, Ext. 2908 / 2116  
Autovon: 636-2908 / 2116

NAVAL WAR COLLEGE

J.J. O'Connell (Jim), Assistant for Management  
Naval War College  
Newport, RI 02840  
Phone: 401-841-2418  
Autovon: 948-2418

NAVAL WEAPONS CENTER

G.F. Linsteadt (George), Code 3203  
Naval Weapons Center  
China Lake, CA 93555  
Phone: 714-939-7325  
Autovon: 245-7325

NAVAL WEAPONS STATION (YORKTOWN)

G.T. Wall, Jr, Code 05  
Naval Weapons Station  
Yorktown, VA 23691  
Phone: 804-887-4971  
Autovon: 953-4971

NAVAL WEAPONS SUPPORT CENTER

C.D. Robinson (Dale), Code 50  
Naval Weapons Support Center  
Crane, IN 47522  
Phone: 812-854-1282 / 1358  
Autovon: 482-1282 / 1358

NAVY ASTRONAUTICS GROUP

CW03 D.F. Shaw, Code SpM001  
Navy Astronautics Group  
Point Mugu, CA 93042  
Phone: 805-982-8827  
Autovon: 351-8827

# APPENDIX A

## NAVY TECHNOLOGY TRANSFER FOCAL POINTS

### NAVY CLOTHING AND TEXTILE RESEARCH FACILITY

J.A. Mylotte (John), Code 13  
Navy Clothing and Textile Research Facility  
21 Strathmore Road  
Natick, MA 01760  
Phone: 617-653-1000, Ext. 2672  
Autovon: 955-2672

### NAVY PERSONNEL RESEARCH & DEVELOPMENT CENTER

A.A. Sjolholm (Allan), Code 201 or  
F. Sands (Frank), Code 201  
Navy Personnel Research and Development Center  
San Diego, CA 92152  
Phone: 714-225-2712 (Sjolholm)\*  
714-225-7424 (Sands)  
Autovon: 933-2712 (Sjolholm)\*  
933-7424 (Sands)

\* Mr. Sjolholm is usually available at the  
SANDTAC offices, 714-236-0601

### NAVY PHOTOGRAPHIC CENTER

Captain R.L. Skillen, Code AIR 56 or  
Cdr. J.R. Douglas, Code AIR 561  
Navy Photographic Center  
Naval Air Systems Command  
Washington, DC 20374  
Phone: 202-433-2102 (Skillen)  
202-433-3451 (Douglas)  
Autovon: 288-2102 (Skillen)  
288-3451 (Douglas)

### OFFICE OF NAVAL RESEARCH

A.C. Williams (Ann), Staff Patent Adviser,  
Code 302  
(for information on invention licensing program)  
Office of Naval Research  
Ballston Tower #1  
800 North Quincy Street  
Arlington, VA 22217  
Phone: 202-692-4005  
Autovon: 222-4005

APPENDIX A

NAVY TECHNOLOGY TRANSFER FOCAL POINTS

OFFICE OF NAVAL RESEARCH

Captain T.A. Gasser  
Office of Naval Research  
800 North Quincy Street  
Arlington, VA 22217  
Phone: 202-692-4225  
Autovon: 222-4225

OFFICE OF NAVAL RESEARCH-BOSTON

F.S. Gardner (Frank)  
Office of Naval Research-Boston  
Building 114, Section D  
666 Summer Street  
Boston, MA 02210  
Phone: 617-542-6000, Ext. 329 / 319 / 112  
Autovon: 955-8329 / 8319 / 8112

OFFICE OF NAVAL RESEARCH-CHICAGO

G. Sandoz (George), Code 499  
Office of Naval Research-Chicago  
536 South Clark Street, Room 286  
Chicago, IL 60605  
Phone: 312-353-6067

OFFICE OF NAVAL RESEARCH-PASADENA

L.E. Larmore (Lewis)  
Office of Naval Research-Pasadena  
1030 East Green Street  
Pasadena, CA 91106  
Phone: 213-795-5971  
Autovon: 360-2410

PACIFIC MISSILE TEST CENTER

Lt. J.A. Slattery, Public Affairs Officer  
Public Affairs Office, Code 0960  
Pacific Missile Test Center  
Point Mugu, CA 93042  
Phone: 805-982-8094  
Autovon: 351-8094

POLARIS MISSILE FACILITY ATLANTIC

E.J. Durr (Edwin), Technical Staff, Code SPC 053  
Polaris Missile Facility Atlantic  
Charleston, SC 29408  
Phone: 803-743-7851  
Autovon: 794-7851

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NAVY TECHNOLOGY TRANSFER FOCAL POINTS

STRATEGIC WEAPONS FACILITY PACIFIC

G.L. Fischer (Glenn), Code SPB 211  
Strategic Weapons Facility Pacific  
Silverdale, WA 98383  
Phone: 206-396-4981  
Autovon: 744-4981

TRIDENT SYSTEM PROJECT

J.L. Crone (John), Code PM2-001  
Scientific Development and Evaluation Director  
c/o Project Manager, Trident System Project  
Department of the Navy  
Washington, DC 20362  
Phone: 202-692-7202  
Autovon: 222-7202

U.S. NAVAL ACADEMY

R.D. Mathieu (Richard)  
Director of Research  
U.S. Naval Academy  
Annapolis, MD 21402  
Phone: 301-267-2504



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## TECHNOLOGY TRANSFER PROJECTS FOR FEDERAL AGENCIES LIST OF SPONSORS

Brookhaven National Laboratory, Nuclear  
Regulatory Commission  
Bureau of Land Management, Department  
of the Interior  
Civil Aeronautics Board  
Defense Advanced Research Projects Agency  
Defense Communications Agency  
Defense Intelligence Agency  
Defense Investigative Service  
Defense Logistics Agency  
Defense Mapping Agency  
Defense Mapping Agency Hydrographic Center  
Department of Commerce  
DOD Tri-Service Medical Information System  
Department of Health, Education, and Welfare  
Department of the Interior  
Department of Justice  
Department of Transportation  
Energy Research and Development Administration  
Environmental Protection Agency  
Federal Aviation Administration  
Federal Bureau of Investigation  
Federal Energy Administration  
Federal Highway Administration, Department of  
Transportation  
Federal Laboratory Consortium for Technology  
Transfer

Federal Railroad Administration, Department  
of Transportation  
Food and Drug Administration  
George C. Marshall Flight Center, NASA  
Goddard Space Flight Center, NASA  
Harry Diamond Laboratory, U.S. Army  
Kelly Air Force Base, San Antonio, TX  
Lawrence Berkeley Laboratory, ERDA  
Lawrence Livermore Laboratory, ERDA  
L.B.J. Space Center, NASA  
Lewis Research Center, NASA  
Maritime Administration  
National Aeronautics and Space Administration  
National Aviation Facilities Experimental  
Center, Federal Aviation Administration  
National Bureau of Standards  
National Cancer Institute  
National Data Buoy Project  
National Environmental Research Center  
National Highway Traffic Safety Administration  
National Institute for Occupational Safety  
and Health  
National Institutes of Health  
National Institutes of Mental Health  
National Marine Fisheries Service  
National Oceanic and Atmospheric Administration  
National Research Council

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## TECHNOLOGY TRANSFER PROJECTS FOR FEDERAL AGENCIES LIST OF SPONSORS

National Science Foundation	U.S. Air Force Data Automation Agency
National Weather Service	U.S. Air Force Data Service Center
Naval Facilities Engineering Command	U.S. Air Force Electronics Systems Program Office
Naval Material Command	U.S. Air Force Engineering Center
Naval Medical Research and Development Command	U.S. Air Force Weapons Laboratory
Naval Medical Research Institute	U.S. Army
Naval Oceanographic Office	U.S. Army Air Mobility Research and Development Laboratory
Naval Regional Medical Center (San Diego)	U.S. Army Communications Systems Agency
Naval Sea Systems Command	U.S. Army Corps of Engineers
Naval Surface Weapons Center	U.S. Army Medical Research and Development Command
North American Air Defense Command	U.S. Army Mobility Equipment Command
Nuclear Regulatory Commission	U.S. Capitol Police
Office of Hazardous Materials, DOT	U.S. Coast Guard
Office of Naval Research	U.S. Coast Guard Research and Development Center
Rome Air Development Center, USAF	U.S. Congress
Rural Development Service, USDA	U.S. Department of Agriculture
Rural Electrification Administration, USDA	U.S. Forest Service
Small Business Administration	U.S. Geological Survey
Smithsonian Institution	U.S. Indian Service
State Department	U.S. Navy
Urban Mass Transportation Administration	U.S. Postal Service
U.S. Air Force	Veterans Administration
U.S. Air Force Academy	
U.S. Air Force Avionics Laboratory	
U.S. Air Force Civil Engineering Center	
U.S. Air Force Communications Service	

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## TECHNOLOGY TRANSFER PROJECTS FOR STATE AND LOCAL GOVERNMENTS LIST OF SPONSORS

Alaska  
Brattleboro, Vermont  
Bucks County, Pennsylvania  
California  
California Air Resource Board  
Connecticut Conference of Municipalities  
Connecticut Department of Planning and Energy  
Policy  
Kern County Air Pollution Control District  
Louisiana State Police Force  
New Bedford, Massachusetts, Harbor Development  
Commission  
New England Innovation Group  
Newport, Rhode Island  
New York City Police Department  
Old Saybrook, Connecticut  
Oregon  
Pennsylvania  
Pennsylvania Governor's Commission on Fire  
Protection and Control

Pennsylvania League of Cities  
Philadelphia Fire Department  
Philadelphia Mayor's Science and Technology  
Advisory Council  
Philadelphia, Pennsylvania  
Rhode Island League of Cities and Towns  
San Bernardino Desert Air Pollution Control  
District  
San Bernardino Water District  
Santa Clara Water District  
San Diego, California (city and county)  
San Diego County Board of Supervisors  
San Diego Science Advisor  
San Diego Unified School District  
South Carolina Wildlife and Marine Resource  
Department  
Virginia  
Washington  
Waterford, Connecticut

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## TECHNOLOGY TRANSFER PROJECTS FOR INDUSTRY AND SMALL BUSINESS LIST OF SPONSORS

Aerojet Ordnance Manufacturing Company	General Dynamics
Aeronutronics Ford	General Electric Company
Aerospace Electronics, Components and Energy Group	Hercules, Incorporated
Allied Chemical Corporation	High Seas Corporation
American Bureau of Shipping	Holex, Incorporated
American Gas Institute	Houston Products and Services, Incorporated
Aneron Corporation	Hughes Aircraft Company
A.O. Smith	Hydro Products, Incorporated
Arctec	Institute of Acoustic Research
Atlantic Research Company	International Harvester, Solar Division
Avco-Lycoming	International Transducer Corporation
Bell Aerospace	Interstate Elex Corporation
Boeing Aerospace	ITT Gilfillan
Boeing Company	Janssen R&D, Incorporated
Canadian Pacific Air	Kintec, Incorporated
Celanese Corporation	Lacoste Romberg
Chaparral Industries	Langley Corporation
Cida-Geigy Corporation	Lincoln Laboratory, Incorporated
Crowley-Maritime Offshore Services	Lockheed Missile and Space
Data General Corporation	Mark Products, Incorporated
Eagle-Picher Company	MB Associates
Energy Research Corporation	McDonnell Douglas Company
Environmental Research and Technology Corporation	Merck and Company, Incorporated
Exxon International Company	Motorola, Incorporated
Ford Motor Company	Ocean Technology, Incorporated
Gard, Incorporated	Olin Corporation
	Operations Research, Incorporated
	Philco-Ford Corporation

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TECHNOLOGY TRANSFER PROJECTS FOR INDUSTRY AND SMALL BUSINESS  
LIST OF SPONSORS

Raytheon Corporation  
Rocket Research Corporation  
Rockwell Collins  
Rockwell International, Marine Systems Division  
Rockwell International, Rocketdyne Division  
Rohr Marine, Incorporated  
Sciaky Bros.  
Science Consultants  
SeaQuest Corporation  
Shell Development Company  
Shipping/Oil Industry  
Singer Company  
Sundstrand Aviation  
Teledyne-McCormick Selph Company  
Textron  
Thiokol Corporation  
TRW Systems  
Warner-Lambert  
Westinghouse  
Xonics, Incorporated

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## TECHNOLOGY TRANSFER PROJECTS FOR NON-PROFIT INSTITUTIONS LIST OF SPONSORS

Acoustical Society of America	Scripps Institute of Oceanography
American Association for Accreditation of Laboratory Animal Care	SEARCH Group, Incorporated
American Association for Laboratory Animal Science	Stanford University
American National Standards Institute	Thames Science Center
Asian-American Mental Health Research Center	Tulane University
Cincinnati General Hospital, Stroke Clinic	United Nations Development Program for Asia and the Pacific
Committee on Laboratory Animal Technicians	University of California, Irvine Medical School
Dartmouth College	University of California, Los Angeles Medical School
Electric Power Research Institute	University of California, San Diego
Georgetown University Medical School	University of California, San Diego Medical School
George Washington University Medical Center	University of California, San Diego Medical School
Grossmont Hospital, La Mesa, California	University Hospital
Harold Brunn Institute	University of Chicago
Harvard University Medical School	University of Connecticut
Institute for Achievement of Human Potential, Philadelphia	University of Delaware
Johns Hopkins University, Applied Physics Laboratory	University of Florida
Massachusetts General Hospital	University of Hawaii
Michael Reese Hospital	University of Illinois
Michigan Technological Institute	University of Massachusetts
Mount Zion Hospital	University of Michigan, Institute of Social Research
Northern Virginia Community College	University of Minnesota
Northwestern Medical School	University of North Carolina
Public Technology, Incorporated	University of Rhode Island
Purdue University	University of Texas
San Diego State University	University of Wisconsin
	Veterans Administration Hospital, San Diego
	Veterans Administration Hospital, Tacoma
	Yale-New Haven Hospital

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## TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
DTNSRDC	Aspirator Jet Aeration for Wastewater Holding Tanks	14 June 1977	20
DTNSRDC	Laser Technology	16-17 February 1977	92
DTNSRDC	Mechanical Transmissions for High Performance Ships	29 September - 1 October 1976	65
DTNSRDC	Numerical Ship Hydrodynamics	19-21 September 1977	125
DTNSRDC	Wing-in-Ground Effect Technology	21 September 1977	65
GIDEP	The Effective Utilization of GIDEP Data and Services	20-22 October 1976	213
NADC	Fire Technology Workshop	26 October 1976	60
NADC	Helicopter Rescue Systems	June 1977	50
NAEC	World Fair for Technology Exchange	7-11 February 1977	5000
NAVAIR	Marine Fog Forecasting	1977	Continuing
NAVELEX	1976 Government Microcircuit Applications Conference	9-11 November 1976	351
NAVOBS	Phobos and Deimos	12 August 1977	500
NAVOBS	Planetary Satellites	12 August 1977	35
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## TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
NAVOBS	Precise Time and Time Interval	30 November - 2 December 1976	300
NAVOBS	Satellites of Mars	11 August 1977	150
NAVORDSTA (Louisville)	Bi-Metallic Deck/Bulkhead Penetration Fitting	21-22 October 1976	14
NAVORDSTA (Louisville)	Electrochemical Machining of Gun Barrels	17 February 1977	12
NAVORDSTA (Louisville)	Bulk Graphite Testing	18 November 1976	14
NAVORDSTA (Louisville)	High Energy Cladding of Aluminum to SES Piping	20-21 December 1976	4
NAVSEA	Progress in Ceramic Gas Turbines	25 January 1977	6
NMRDC (NHRG)	Coagglutination Test for Rapid Diagnosis of Salmonellosis	26 April 1977	5
NMRDC (NHRG)	Faith and the POW (Film)	2-4 August 1977	120
NMRDC (NHRG)	First National Conference on Military Family Research	8-13 May 1977	15,000
NMRDC (NSMRL)	Current Research in Submarine and Diving Medicine	Distributed 31 August - 3 September 1977	Distributed 400
		25-28 April 1977 18-22 June 1977	- -

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## TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
NPRDC	Federal Laboratory Consortium Meeting - Portland, Oregon	17-21 May 1977	375
NPRDC	National Symposium on Utilization of People-Related Research, Development, Test and Evaluation	14-17 June 1977	150
NRL	Advanced Alloy Development Program for High Temperature Reactor Materials	Quarterly meetings	-
NRL	Failure Analysis Short Course	April 1977	23
NRL	Failure Analysis Short Course	19 September 1977	45
NRL	Forty-seventh Shock and Vibration Symposium	19-21 October 1976	325
NRL	Materials Performance in Controlled Fusion Reactor Environment	Continuing	-
NRL	National Program: Irradiation Effects on Mechanical Properties of Fast Breeder Reactor Structural Materials	Continuing	-
NRL	Second Annual Review of the NRL Program on High Performance Composites and Adhesives for V/STOL Aircraft	8 September 1977	100
NRL	Structural Integrity of Water Reactor Pressure Boundary Components	Continuing	-

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## TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
NRL	Technology Transfer for Domestic Application of NRL Knowledge in the Fields of Materials for Nuclear Reactor Systems	Periodically through- out year	-
NRL	U.S.S. Monitor Plate	15 September 1977	15
NRL	Vessel Integrity Review Group Meeting, "Pressure Vessel Steel Irradiation-Anneal-Reirradiation Behavior"	20 July 1977	35
NRL	"Where Can Generation of New Data Reduce Over- conservatism in the Design of Reactor Systems?"	17 November 1976	100
NTEC	Ninth Naval Training Equipment Center/Industry Conference	9-11 November 1976	545
NWC	Federal Laboratory Consortium for Technology Transfer	17-19 May 1977	400
NWC	Federal Laboratory Consortium for Technology Transfer	9-11 November 1976	100
NWC	First Annual Innovation Group	25-27 March 1977	50
ONR	Alternate Hydrocarbon Fuels for Engines: Combustion and Chemical Kinetics	7-9 September 1977	80
ONR	Applications of Phase Diagrams in Metallurgy and Ceramics	10-12 January 1977	175

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## TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
ONR	Computer Science and Statistics: Tenth Annual Symposium on the Interface	14-15 April 1977	420
ONR	Computerized Adaptive Personnel Testing	19-22 July 1977	70
ONR	Conducting Nonmetallic Materials: "Conference on Synthesis and Properties of Low-Dimensional Materials"	13-16 June 1977	300
ONR	Eighteenth American Towing Tank Conference	23-25 August 1977	150
ONR	Electrochemistry and Physics of Semiconductor Liquid Interfaces Under Illumination	3-5 May 1977	40
ONR	Fifth Biennial Symposium on Turbulence	3-5 October 1977	-
ONR	Finite Element Methodology for the Solution of Non-Elliptic Equations with Applications to Fluid and Plasma Dynamics	25-29 July 1977	100
ONR	First National Conference on Military Family Research	31 August - 3 September 1977	400
ONR	Fracture Mechanics of Ceramics	27-29 July 1977	194
ONR	Multiple Objective Decision Making	22-26 August 1977	50
ONR	Physics of Compound Semiconductor Interfaces	8-10 February 1977	120
ONR	Second Boundary Layer Transition Workshop	13-15 September 1976	100

APPENDIX C

FY 1977

TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
ONR	Second International Cryogenic Materials Conference	2-5 August 1977	-
ONR	Symposium on Physical Chemistry and Hydrodynamics	11-13 July 1977	100
ONR	Symposium on Structure of Turbulence and Drag Reduction	7-12 June 1976	117
ONR	Symposium on Turbulent Shear Flows	18-20 April 1977	215
ONR	Tri-Service Corrosion Conference	26-28 October 1976	125
ONR	Twenty-fifth Meeting of the Heat Transfer and Fluid Mechanics Institute	21-23 June 1976	153
ONR-Chicago	Infrared Information Symposia	5 meetings during year	1000
USNA	Application of Catastrophe Theory to the Study of International Event Flows	21-24 April 1977	50
USNA	Condensation in High Speed Flows	14-17 June 1977	-
USNA	Eighteenth American Towing Tank Conference	23-25 August 1977	200
USNA	Eleventh Washington Area High Pressure Colloquium	13 October 1976	50

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# APPENDIX C

FY 1977

## TECHNOLOGY TRANSFER CONFERENCES AND SYMPOSIA

SPONSOR/PARTICIPANT	PURPOSE/TITLE	DATE	ATTENDANCE
USNA	First International Symposium on Computer-Aided Hull-Surface Definition	26-27 September 1977	160
USNA	Kinetic Theory of Cluster Formation	29 March-2 April 1977	-
USNA	Microprocessors	12-13 May 1977	150
USNA	Modelling the International Event Stream -- the USA and China	16-20 March 1977	50
USNA	Naval Academy Heat Balanced Engine (NAHBE)	28 February - 4 March 1977	300
USNA	Naval Technology in Foreign Environmental Programs	17-21 March 1977	75
USNA	Numerical/Laboratory Computer Methods in Fluid Mechanics	5-10 December 1976	-
USNA	Physics Education	22-24 June 1977	300
USNA	Physics Education	11-13 November 1976	150
USNA	Theory of Heat Balanced Engines and Conversion Methods	23-27 May 1977	15
USNA	Theory of Heat Balanced Engines and Conversion Methods	Monthly - 1977	60



APPENDIX D

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Positive Reports for FY 1977 Technology Transfer Annual Report

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List of Navy Activities Submitting  
Negative Reports for FY 1977 Technology Transfer Annual Report

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APPENDIX D

LIST OF NAVY ACTIVITIES SUBMITTING POSITIVE REPORTS FOR  
FY 1977 TECHNOLOGY TRANSFER ANNUAL REPORT

TOTAL: 44 activities

Civil Engineering Laboratory

David W. Taylor Naval Ship Research & Development Center

Government-Industry Data Exchange Program - Fleet Analysis Center, Naval Weapons Station,

Seal Beach, Corona Annex

National Parachute Test Range

Naval Aerospace Medical Research Laboratory

Naval Air Development Center

Naval Air Engineering Center

Naval Air Propulsion Test Center

Naval Air Systems Command

Naval Air Test Center

Naval Air Test Facility

APPENDIX D

LIST OF NAVY ACTIVITIES SUBMITTING POSITIVE REPORTS FOR  
FY 1977 TECHNOLOGY TRANSFER ANNUAL REPORT

Naval Avionics Facility  
Naval Biosciences Laboratory  
Naval Coastal Systems Laboratory  
Naval Electronic Systems Command  
Naval Environmental Prediction Research Facility  
Naval Explosive Ordnance Disposal Facility  
Naval Facilities Engineering Command  
Naval Health Research Center  
Naval Material Industrial Resources Office  
Naval Medical Research & Development Command  
Naval Medical Research Institute  
Naval Observatory  
Naval Oceanographic Office  
Naval Ocean Research & Development Activity  
Naval Ocean Systems Center

APPENDIX D

LIST OF NAVY ACTIVITIES SUBMITTING POSITIVE REPORTS FOR  
FY 1977 TECHNOLOGY TRANSFER ANNUAL REPORT

Naval Ordnance Station (Indian Head)  
Naval Ordnance Station (Louisville)  
Naval Postgraduate School  
Naval Research Laboratory  
Naval Sea Systems Command  
Naval Ship Weapon Systems Engineering Center  
Naval Submarine Medical Research Laboratory  
Naval Surface Weapons Center  
Naval Training Equipment Center  
Naval Underwater Systems Center  
Naval Weapons Center  
Navy Clothing & Textile Research Facility  
Navy Personnel Research & Development Center  
Navy Photographic Center

APPENDIX D

LIST OF NAVY ACTIVITIES SUBMITTING POSITIVE REPORTS FOR  
FY 1977 TECHNOLOGY TRANSFER ANNUAL REPORT

Office of Naval Research

Office of Naval Research - Chicago

Pacific Missile Test Center

U.S. Naval Academy

APPENDIX D

LIST OF NAVY ACTIVITIES SUBMITTING NEGATIVE REPORTS FOR  
FY 1977 TECHNOLOGY TRANSFER ANNUAL REPORT

TOTAL: 20 activities

Anti-Submarine Warfare Systems Project  
Fleet Combat Direction Systems Support Activity (Dam Neck)  
Marine Corps Development & Education Command  
Naval Ammunition Depot (McAlester)  
Naval Blood Research Laboratory  
Naval Dental Research Institute  
Naval Electronic Systems Test and Evaluation Detachment  
Naval Sea Support Center, Atlantic  
Naval Sea Support Center, Pacific  
Naval Sea Systems Command Management Office, Western Pacific  
Naval Supply Systems Command  
Naval War College  
Naval Weapons Station (Yorktown)

APPENDIX D

LIST OF NAVY ACTIVITIES SUBMITTING NEGATIVE REPORTS FOR  
FY 1977 TECHNOLOGY TRANSFER ANNUAL REPORT

Naval Weapons Support Center  
Navy Astronautics Group  
Office of Naval Research - Boston  
Office of Naval Research - Pasadena  
Polaris Missile Facility - Atlantic  
Strategic Weapons Facility - Pacific  
Trident System Project

# APPENDIX E

## ABBREVIATIONS AND ACRONYMS

CEL	Civil Engineering Laboratory
DARPA	Defense Advanced Research Projects Agency
DCA	Defense Communications Agency
DIA	Defense Intelligence Agency
DIS	Defense Investigative Service
DMA	Defense Mapping Agency
DOC	Department of Commerce
DOD	Department of Defense
DOT	Department of Transportation
DTNSRDC	David Taylor Naval Ship Research and Development Center
EPA	Environmental Protection Agency
ERDA	Energy Research and Development Agency
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration
GIDEP	Government-Industry Data Exchange Program
HEW	Department of Health, Education, and Welfare
HUD	Department of Housing and Urban Development
IPA	Intergovernmental Personnel Act
MARAD	Maritime Administration



## APPENDIX E

### ABBREVIATIONS AND ACRONYMS

NADC	Naval Air Development Center
NAEC	Naval Air Engineering Center
NAF	Naval Avionics Facility
NAMRL	Naval Aerospace Medical Research Laboratory
NAPTC	Naval Air Propulsion Test Center
NASA	National Aeronautics and Space Administration
NATC	Naval Air Test Center
NAVAIR	Naval Air Systems Command
NAVELEX	Naval Electronics Systems Command
NAVEODFAC	Naval Explosive Ordnance Disposal Facility
NAVFAC	Naval Facilities Engineering Command
NAV OBS	Naval Observatory
NAVOCEANO	Naval Oceanographic Office
NAVORDSTA	Naval Ordnance Station
NAVPHOTOCEN	Navy Photographic Center
NAVSEA	Naval Sea Systems Command
NAVSWEASES	Naval Ship Weapon Systems Engineering Station
NBS	National Bureau of Standards
NCI	National Cancer Institute
NCSL	Naval Coastal Systems Laboratory

APPENDIX E  
ABBREVIATIONS AND ACRONYMS

NHRC	Naval Health Research Center
NIH	National Institutes of Health
NIMH	National Institutes of Mental Health
NIOSH	National Institute for Occupational Safety and Health
NMF	National Marine Fisheries Service
NMRDC	Naval Medical Research and Development Command
NMRI	Naval Medical Research Institute
NOAA	National Oceanic and Atmospheric Administration
NORDA	Naval Ocean Research and Development Activity
NOSC	Naval Ocean Systems Center
NPRDC	Navy Personnel Research and Development Center
NPS	Naval Postgraduate School
NPTR	National Parachute Test Range
NRL	Naval Research Laboratory
NSF	National Science Foundation
NSMRL	Naval Submarine Medical Research Laboratory
NSWC	Naval Surface Weapons Center
NTEC	Navy Training Equipment Center
NUSC	Naval Underwater Systems Center
NWC	Naval Weapons Center

## APPENDIX E

### ABBREVIATIONS AND ACRONYMS

NWS	National Weather Service
ONR	Office of Naval Research
ORI	Operations Research, Inc.
PMTc	Pacific Missile Test Center
RDT&E	Research, Development, Test, and Evaluation
UN	United Nations
USAF	United States Air Force
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USN	United States Navy
USNA	United States Naval Academy
VA	Veterans Administration